TECHLAW, INC.

3115 Loma Court Tenino, WA 98589 509-521-6693

To: Steve Trent

From: Bruce Christian

Pages: 1

Date: 26 November 2003

Information Request #1

WSCF20030459-All WSCF20030461-All

WSCF20030613-All WSCF20030757-All

W03975

Detection limits - Do I need to use the Soil High or Soil Low detection limits

Use the Soil Low detection limits.



EDMC

TECHLAW, INC.

3115 Loma Court Tenino, WA 98589 509-521-6693

To: Steve Trent

From: Bruce Christian

Pages: 1

Date: 26 November 2003

Information Request #2

WSCF20030459-All WSCF20030461-All WSCF20030613-All WSCF20030757-All W03975-All

I need a complete reference for DOE/RL 2000-60 Rev. 1

Put on CD and shipped via Federal Express on 09/29/03

TECHLAW, INC.

3115 Loma Court Tenino, WA 98589 509-521-6693

To: Steve Trent

From: Bruce Christian

Pages: 1

Date: 26 November 2003

Information Request #5

WSCF20030459 - Metals

WSCF20030461

WSCF20030613

WSCF20030757

The method reported for almost all of the metal analysis does not match the analysis in the SAP 96010B versus EPA 200.8). Do the same detection limits still apply??

Yes, the same detection limits apply.

TECHLAW, INC.

3115 Loma Court Tenino, WA 98589 509-521-6693

To: Steve Trent

From: Bruce Christian

Pages: 1

Date: 26 November 2003

Information Request #6

WSCF20030459 - rAD WSCF20030461X Sures WSCF20030613 WSCF20030757

The lab reported alpha and bet by liquid scintillation but there is no QC data present. The chain-of-custody does not request the analysis. Do you want it validated.

No

TECHLAW, INC.

3115 Loma Court Tenino, WA 98589 509-521-6693

To: Steve Trent

From: Bruce Christian

Pages: 1

Date: 26 November 2003

Information Request #7

WSCF20030461 - RAD-Rerun data

The lab reported americium-2419gea) as 1.88 e-010. That seems like an awfully small number. Is it correct?

Please see data package WSCF20031181 (dated 10/17/03).

TECHLAW, INC.

3115 Loma Court Tenino, WA 98589 509-521-6693

To: Steve Trent

From: Bruce Christian

Pages: 1

Date: 26 November 2003

Information Request #11

WSCF20030459-rad WSCF20030461-rad WSCF20030613-rad WSCF20030757-rad

I'm not seeing any tracer/carrier yield data reported by WSCF. Is it in the package somewhere and I'm just not seeing it??

Information received from the laboratory and forwarded to Techlaw on 11/13/03

TECHLAW, INC.

3115 Loma Court Tenino, WA 98589 509-521-6693

To: Steve Trent

From: Bruce Christian

Pages: 1

Date: 26 November 2003

Information Request #12

WSCF20030461 - Wet Chem

The lab reports the fluoride RPD as 69%, but the MS/MSD RPD I calculated is just a few percent? Did the lab run a separate duplicate?

Here is the e-mail response that Steve received from the lab.

Doris here are answers to IR #12 and IR #9.

Steve

-----Original Message-----From: Fitzgerald, Scot L

Sent: Wednesday, October 29, 2003 1:35 PM

To: Trent, Stephen J **Cc:** Trechter, John E Jr.

Subject: FW: Some more data validation questions...

Steve,

Here is the information you requested. For Item number one there are two RPDs one for the sample/dup and one for the MS/MSD. The RPD differences would be expected under the conditions discussed below.

Scot

----Original Message----From: Baird, William W (Bill)

Sent: Wednesday, October 29, 2003 12:37 PM

To: Fitzgerald, Scot L

Subject: RE: Some more data validation questions...

1. The fluoride peak was noted in the comments to have an unidentified compound possibly interfering. The fluoride is flagged with a B and an X. The B is for the concentration being below the lowest cal std but above the MDL, the X is for the possible interfering peak. Here is a quote of the comments:

"IC: Fluoride, nitrite-N and phosphate-P detected, but at concentrations less than that of the lowest calibration level. Also unknown peak potentially interfering with fluoride, which is why matrix spike recoveries and the relative percent difference between the sample and dup are high."

The MS is 127% and the MSD is 120%. This could be accounted for if the sample result was biased low due to the possible interference.

I don't see any reference to a "few percent" in any of the comments in Labcore.

2. The MSD was not spiked (analyst error). Thus, it was not reported. If necessary, we can resurrect and report the unspiked result which could be used as a DUP of the sample.

Bill

-----Original Message-----From: Fitzgerald, Scot L

Sent: Tuesday, October 28, 2003 3:30 PM

To: Baird, William W (Bill)

Subject: FW: Some more data validation questions...

Bill,

Can you look into these for me?

Scot

----Original Message-----From: Neely, Michael

Sent: Tuesday, October 28, 2003 2:41 PM

To: Dale, Troy F; Fitzgerald, Scot L

Cc: Trechter, John E Jr.

Subject: FW: Some more data validation questions...

Troy/Scot:

More questions from Steve - please see below e-mail message.

Thanks,

Mike Neely Phone: 509-373-0654

Phone: 509-3/3-0654 Cell: 509-528-2666

Pager: 509-373-PAGE, Extension 6730

FAX: 509-372-0456

----Original Message----From: Trent, Stephen J

Sent: Tuesday, October 28, 2003 2:12 PM

To: Neely, Michael

Subject: Some more data validation questions...

Mike,

Some more questions from the validator -

- 1) WSCF20030461 The lab reports the fluoride RPD as 69%, but the MS/MSD RPD calculated by the validator is just a "few percent". Did the lab run a separate duplicate?
- 2) WSCF20030757 No MSD or lab duplicate data was provided for metals analysis is it available or was there a reason it is not presented in the data package?

Thanks in advance..

Steve

			1. Date		2. Review No.		
ORP-1 (02/02	114)			Nov 25, 2003		N/A	
•	ORP - REVIEW COMME	NT RECORD (RCR)	3. Project			<u></u>	
			, [200-PW-2 & 4	4. Page 1 of		
Doc	ument Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organizat		9. Location/	Phone
		Groundwater Protection	Bill	Env & Se		E6-	35
aca	Package SDG 30461	program/200-PW-2 & 4 OU	Thackabe			372-0	-
7. Cor	mment Submittal Approval	10. Agreement with indicated comment disposition(12-16-0-3 Reviewer/Point of Co.		11. CLOSED VK	Reviewer/Poi	introf Contact	
•	Organization Manager (optional)	Date	•	Date		· · · · · · · · · · · · · · · · · · ·	
		Requester			Requ	ester	
12. Item	13a. Comment(s)/Discrepancy(s) (Provide technical just recommendation of the action required to correct/resolv	stification for the comment and detailed concurrent ethe discrepancy/problem indicated.) 14. Review Concurrent Required	ce l	Disposition (Provide justifica Provide separate attachme	ation if NOT accepents if necessary.	ted).	St.
L	Inorganics - pg 1, TechLaw validat cites DOE/RL-2000-60 Draft B. Howe and is cited on pg 4.		can	re-	4	•	(
2	Radiochemistry - pg 1, TechLaw val introduction cites DOB/RL-2000-60 is in effect and is cited on pg 4.	Draft B. However Rev 1	Ca	rus 1	<u> </u>		(
3	Radio Chemistry - Pg 2, Laboratory the blank contamination affecting to B16XR8 too.		Ha .	typo was	an-		(
4	Radio Chemistry - Pg 3, Minor defithat the blank contamination affectapply to B16XR8 too.			#3			(
5	Radiochemistry - pg 32, 5. Blanks the blank contamination affecting also apply to B16XR8 Lead 214 too.	B16RX9 Lead 214 should	15 kg	ol-the lead 2 is >5% th	a blank	level.	(
6	Semivolatiles - pg 1, TechLaw vali introduction cites DOE/RL-2000-60 is in effect and is cited on pg 4A	Draft B. However Rev 1	car	r= /	7		(
7	Volatiles - pg 1, TechLaw validati cites DOE/RL-2000-60 Draft B. Howe and is cited on pg 4.		Car	~ le			
8	Wet Chemistry - pg 1, TechLaw validation cites DOE/RL-2000-60 is in effect and is cited on pg 4.	Draft B. However Rev 1	ca	~ le	7		

Date: 17 November 2003

To: Fluor Hanford Inc. (technical representative)

From: TechLaw, Inc.

Project: 200-PW-2/200-PW-4 OU - Borehole Soil Sampling

Subject: Semivolatile - Data Package No. WSCF20030461 (SDG No. 30461)

INTRODUCTION

This memo presents the results of data validation on Data Package No. 30461 prepared by WSCF. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample	Media	Validation	Analysis
B16RX8	4/4/03	Soil	С	See note 1
B16RX9	4/4/03	Soil	С	See note 1

¹⁻Semivolatiles by 8270B; TPH-G and TPH-D by 8015.

Data validation was conducted in accordance with the FHI validation statement of work and the 200-PW-2 Uranium-Rich Process Waste Group Operable Unit RI/FS Work Plan and RCRA TSD Unit Sampling Plan (DOE/RL-2000-60, Rev. 1, December 2000). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

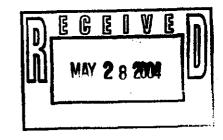
Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Documentation Requested by Client

DATA QUALITY OBJECTIVES

Holding Times/Sample Preservation

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.



If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, all diethylphthalate results were qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike

Matrix spike/matrix spike duplicate and blank spike sample analyses are used to assess the analytical accuracy of the reported data. Matrix spike/matrix duplicate results are used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within

laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All matrix spike/matrix spike duplicate and blank spike results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

Due to the lack of a surrogate analysis, all TPH-gasoline results were qualified as estimates and flagged "J".

All other surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of \pm 1-35%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All MS/MSD RPD results were acceptable.

Field Duplicate Samples

No field duplicate results were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the target quantitation limits (TQL's) to ensure that laboratory detection levels meet the required criteria. All results met the analyte specific TQL.

Completeness

Data package No. 30461 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to method blank contamination, all diethylphthalate results were qualified as undetected and flagged "U". Due to the lack of a surrogate analysis, all TPH-gasoline results were qualified as estimates and flagged "J". Data flagged "J" is an estimate, but under the FHI validation SOW, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

FHI, Contract #20266, Validation Statement of Work, Fluor Hanford Incorporated, July 7, 2003.

DOE/RL-2000-60, Rev. 1, 200-PW-2 Uranium-Rich Process Waste Group Operable Unit RI/FS Work Plan and RCRA TSD Unit Sampling Plan, December 2000.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the FHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J Indicates the compound or analyte was analyzed for and detected.

 Due to a minor QC deficiency identified during the data validation,
 the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decisionmaking purposes).

Appendix 2
Summary of Data Qualification

SEMIVOLATILE DATA QUALIFICATION SUMMARY

SDG: 30461	REVIEWER: TLI	DATE: 11/17/03	PAGE_1_OF_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
TPH-G	J	All	No surrogate analysis
Diethylphthalate	υ	All	Blank contamination

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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Project: FLUOR-HANFORD			1						
Laboratory: WSCF				1					
Case:	SDG:	WSCF2003	0461	1					
Sample Number		B16RX8		B16RX9					
Remarks									-
Sample Date		4/4/0	3	4/4/0	3				
Analysis Date		4/18/0	3	4/22/0	3	<u> </u>			
Semivolatile (8270B)	TQL	Result	Q	Result	Q	Result	Q	Result	Q
1,2,4-Trichlorobenzene		<310	U	<310	Ú				
1,2-Dichlorobenzene		<380	U	<370	Τυ	<u> </u>			_
1,3-Dichlorobenzene		<340	U	<330	U				
1,4-Dichlorobenzene		<330	U	<330	ΙÜ				
2,4,5-Trichlorophenol	1	<710	Ü	<76.0	U				
2,4,6-Trichlorophenol		<71.0	Ú	<69.0	U		_		
2,4-Dichlorophenol		<85.0	Ū	<83.0	Ū		_		
2,4-Dimethylphenol		<71.0	U	<69.0	U		_		
2,4-Dinitrophenol		<710	U	<230	U				
2,4-Dinitrotoluene		<71.0	Ü	<69.0	U				
2,6-Dinitrotoluene		<71.0	U	<69.0	U				1
2-Butoxyethanol		<110	U	<100	U				1
2-Chloronaphthalene		<85.0	Ų	<83.0	U				
2-Chlorophenol		<160	U	<150	U				
2-Methylnaphthalene		<190	Ü	<190	U				
2-Methylphenol		<71.0	U	<69.0	U				1
2-Nitroaniline		<71.0	U	<69.0	U				
2-Nitrophenol		<180	U	<180	U				
3 & 4-Methylphenol (total)		<120	U	<120	U				
3,3-Dichlorobenzidine		<85.0	U	<83.0	U				
3-Nitroaniline		<71.0	U	<69.0	U				
4,6-Dinitro-2-methylphenol		<710	U	<690	U				
4-Bromophenyl-phenyl ether		<71.0	U	<69.0	U				
4-Chloro-3-methylphenol		<71.0	U	<69.0	U				
4-Chloroanaline		<99.0	U	<97.0	U				
4-Chlorophenyl-phenyl ether		<71.0	U	<69.0	U				
4-Nitroaniline		<260	U	<260	U				
4-Nitrophenol		<690	U	<670	Ü				
Acenaphthene		<71.0	U	<69.0	U				
Acenaphthylene		<85.0	U	<83.0	U				
Anthracene		<71.0	U	<69.0	U				

Project: FLUOR-HANFORD	-]					
Laboratory: WSCF									
Case:	SDG: V	VSCF200304	161	1					
Sample Number		B16RX8		B16RX9					
Remarks									
Sample Date		4/4/03		4/4/03				T	
Analysis Date		4/18/03		4/22/03					
Semivolatile (8270B)	TQL	Result	Q	Result	Q	Result	Q	Result	Q
Benzo-a-anthracene		<71.0	Ū	<69.0	U				
Benzo-a-pyrene		<71.0	Ü	<69.0	U				\top
Benzo(b)fluoranthene*		<71.0	J	<69.0	J				
Benzo(g,h,i)perylene		<71.0	٥	<69.0	U				\top
Benzo(k)fluoranthene*		<71.0	رد	<69.0	U				\top
bis(2-Ethylhexyl)phthalate		620		<580	Ū				\top
Bis(2-Chloro-1-methylene)		<270	د	<260	U				
Butylbenzylphthalate		<71.0	J	<69.0	U				
Carbazole		<85.0	J	<83.0	ح				
Chrysene		<71.0	ح	<69.0	כ				1
Di-n-butylphthalate	<u> </u>	<92.0	J	<90.0	J		1		\top
Di-n-octylphthalate		<71.0	U	<69.0	υ				\top
Dibenz(a,h)anthracene		<71.0	د	<69.0	U				7
Dibenzofuran		<71.0	ے	<69.0	U				Τ
Diethylphthalate		1100	5	1000	U				
Dimethylphthalate		<71.0	וכ	<69.0	U				
Fluoranthene		<71.0	د	<69.0	U				
Fluorene		<71.0	U	<69.0	U				
Hexachlorobenzene		<71.0	U	<69.0	U				
Hexachlorobutadiene		<390	U	<380	U				
Hexachlorocyclopentadiene		<330	U	<330	U	<u> </u>			
Hexachloroethane		<500	U	<490	U		_ _		
Indeno(1,2,3-cd)pyrene		<71.0	U	<69.0	U		_ _		
Isopherone	ļ	<71.0	U	<69.0	U				
N-Nitroso-di-n-propylamine	ļ	<71.0	U	<69.0	U				
N-Nitrosodiphenylamine	<u> </u>	<71.0	5	<69.0	Ū		_		
Naphthalene		<300	5	<300	U		_ _	<u> </u>	
Nitrobenzene	<u> </u>	<280	U	<270	U	ļ			
Pentachlorophenol	-	<320	U	<310	U				
Phenanthrene		<71.0	U	<69.0	U		_		
Phenol	330	<110	υ	<100	Ü	 -	_		
Pyrene	 	<71.0	U_	<69.0	U			 	
Tri-n-butylphosphate	330	94.0	 	100					ֈ_
bis(2-Chloroethyl)Eth		<260	U	<260	U	_	_	 	4
bis(2-Chloroethoxy)methane	-	<120	U	<120	U	ļ			
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VIII

Project: FLUOR-HANFORI	D		ĺ						
Laboratory: WSCF	*]					
Case:	SDG: V	VSCF20030	461						
Sample Number		B16RX8		B16RX9			_		
Remarks					_	1		1 -	
Sample Date		4/4/03		4/4/0)3			1	
ТРН	TQL	Result	Q	Result	Q	Result	Q	Result	Q
Kerosene	5000	<4200	ΩJ	<4200	Ū				
TPH-Diesel	5000	7800	J	<4200	U				
TPH-Gasoline	5000	<250	ŨJ	<250	UJ				\top
									\top

Attention: Project:

Steve Trent

F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

	C1-#	Climat I	,	a.a.	•	35	WSCF						
	Sample #	Client I		CAS#	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	Analyze Sample Receive
	W030000159	BURRESSER.	GPP	7440-50-8	Copper by ICP-MS	SOLID	LA-505-412		12.9	ug/g	0.49	0.24	04/15/03 04/04/03 04/04/03
	W030000159	B16RX8	GPP	7439-92-1	Lead by ICP-MS	SOLID	LA-505-412		2.80	ug/g	0.49	0.58	04/15/03 04/04/03 04/04/03
	W030000159	B16RX8	GPP	7439-96-5	Manganese by ICP-MS	SOLID	LA-505-412		433	ug/g	4.86	1.5	04/15/03 04/04/03 04/04/03
	W030000159	B16RX8	GPP	7439-97-6	Mercury by ICP-MS	SOLID	LA-505-412	U	< 0.0486	ug/g	0.49	0,049	04/15/03 04/04/03 04/04/03
	W030000159	B16RX8	GPP	7439-98-7	Molybdenum by ICP-MS	SOLID	LA-505-412	E	1.54	ug/g	4.86	15	04/15/03 04/04/03 04/04/03
	W030000159	B16RX8	GPP	7440-02-0	Nickel by ICP-MS	SOLID	LA-505-412		6.25	ug/g	0.49	0.24	04/15/03 04/04/03 04/04/03
	W030000159	B16RX8	GPP	7782-49-2	Selenium by ICP-MS	SOLID	LA-505-412	EU	< 1.46	ug/g	4.86	1.5	04/15/03 04/04/03 04/04/03
	W030000159		GPP	7440-22-4	Silver by ICP-MS	SOLID	LA-505-412		0.118	ug/g	0.49	0.097	04/15/03 04/04/03 04/04/03
	W030000159	B16RX8	GPP	7440-28-0	Thallium by ICP-MS	SOLID	LA-505-412		0.121	ug/g	0.49	0.049	04/15/03 04/04/03 04/04/03
	W030000159	B16RX8	GPP	7440-29-1	Thorium by ICP-MS	SOLID	LA-505-412		2.41	ug/g	0,49	0.097	04/15/03 04/04/03 04/04/03
	W030000159	B16RX8	GPP .	7440-61-1	Uranium by ICP-MS	SOLID	LA-505-412		118	ug/g	4.86	0.49	04/15/03 04/04/03 04/04/03
	W030000159	B16RX8	GPP	7440-62-2	Vanadium by ICP-MS	SOLID	LA-505-412		104	ug/g	4.86	1.9	04/15/03 04/04/03 04/04/03
	W030000159	B16RX8	GPP	7440-68-6	Zine by ICP-MS	SOLID	LA 505-412		58.8	ug/g	4,86	19	04/15/03 04/04/03 04/04/03
-	W030000159	B16RX8	GPP	TPH-G	Total Pet. Hydrocarbons Gas	SOLID	NWTPH	UI	< 250	ug/kg		2.5e+02	04/16/03 04/04/03 04/04/03
\Rightarrow	W030000159	B16RX8	GPP	13981-16-3	Pu-238 by AEA	SOLID	LA-508-471	U T	0.0360	pCi/g		0.066	04/17/03 04/04/03 04/04/03
\bigcirc	W030000159	B16RX8	GPP	E,T,C	Pu-238 by AEA Total Cntg Error	SOLID	LA-508-471		120	%	•	0.0	04/17/03 04/04/03 04/04/03
	W0300001E9	B16RX8	GPP	E,T,C	Pu-239/240 AEA Total Cntg Err	SOLID	LA-508-471		100	%		0.0	04/17/03 04/04/03 04/04/03
٥-	W030000159	B16RXB	GPP	PU-239/240	Pu-239/240 by AEA	SOLID	LA-508-471	U	8.90e-03	pCi/g		0.066	04/17/03 04/04/03 04/04/03
	W030000159	B16RX8	GPP	120-82-1	1,2,4-Trichlorobenzene	SOLID	LA-523-456	Ü	< 310	ug/kg	1.00	3.1e+02	04/18/03 04/04/03 04/04/03
N	W030000159	B16RX8	GPP	95-50-1	1,2-Dichlorobenzene (SV)	SOLID	LA-523-456	U	< 380	ug/kg	1.00	3.8e + 02	04/18/03 04/04/03 04/04/03
	W0300001E9	B16RX8	GPP	541-73-1	1.3 Dichlerobenzene	SOLID	LA-523-456	Ú	< 340	ug/kg	1,00	3.4e+02	04/18/03 04/04/03 04/04/03
	W030000159	B16RX8	GPP	10 6 -46-7	1,4-Dichlorobenzene (SV)	SOLID	LA-523-456	U	< 330	ug/kg	1.00	3.3e+02	04/18/03 04/04/03 04/04/03
	W030000159	816RX8	GPP	95-95-4	2,4,5-Trichlorophenol	SOLID	LA-523-456	U	< 710	ug/kg	1.00	7.10+02	04/18/03 04/04/03 04/04/03
	W030000159	816RX8	GPP	88-06-2	2,4,6-Trichlorophenol	SOLID	LA-523-456	U	< 71.0	ug/kg	1.00	71	04/18/03 04/04/03 04/04/03
	W030000159	816RX8	GPP	120-83-2	2,4-Dichlorophenal	SOLID	LA-523-456	U	< 85.0	ug/kg	1.00	. 85	04/18/03 04/04/03 04/04/03
	W030000159	B1GRX8	GPP	105-67-9	2,4-Dimethylphenol	SOLID	LA-523-456	U	< 71.0	ug/kg	1.00	71	04/18/03 04/04/03 04/04/03
	W030000159	B16RX8	GPP	51-28-5	2,4-Dinitrophenal	SOLID	LA-523-456	U	< 710	ug/kg	1.00	7.1e + 02	04/18/03 04/04/03 04/04/03

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Report W004/ver. 5.1

Ground Water Protection Program

E - Analyte is an estimate, has potentially larger errors

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Attention: Project: Steve Trent

F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

	_					WSCF								
Sample #	Client ID		CAS#	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
W030000159	B16FLX8 (PP	121-14-2	2,4-Dinitrotoluene	SOLID	LA-523-456	υ	< 71.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 (iPP	606-20-2	2,6-Dinitrotoluene	SOLID	LA-523-456	U	< 71.0	ug/kg	1,00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 (SPP.	111 76-2	2-Butoxyethanol	SOLID	LA-523-456	Ų.	< . 110	ug/kg	1.00	1.1e+02	04/18/03	04/04/03	04/04/03
W030000159	B16RXB C	iPP	91-58-7	2-Chloronaphthalene	SOLID	LA-523-456	U	< 85.0	ug/kg	1.00	85	04/18/03	04/04/03	04/04/03
W030000169	B16AX8 0	pp .	95-57-8	2-Chlorophenot	SOLID	LA-523-456	Ü.	< 160	ug/kg	1.00	1,6e + 02	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 0	iPP	91-57-6	2-Methylnaphthalene	SOLID	LA-523-456	U	< 190	ug/kg	1.00	1.9e+02	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 (SPP .	95-48-7	2-Methylphenol	SOLID	LA-523-456	U	< 71.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 0	BPP	88-74-4	2-Nitroaniline	SOLID	LA-523-456	U	< 71.0	ug/kg	1,00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 C	iPP	88-76-5	2-Nitrophenol	SOLID	LA-523-456	Ü.	< 180	μg/kg	1.00	1,8e + 02	04/18/03	04/04/03	04/04/03
W030000159	B16RX8	PP	108-39-4	3 & 4 Methylphenol Total	SOLID	LA-523-456	U	< 120	ug/kg	1.00	1.2e+02	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 (JPP.	91-94-1	3,3-Dichlorobenzidine	SOLID	LA-523-456	u.	< 85.0	ug/kg	1.00	95	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 (PP	99-09-2	3-Nitroaniline	SOLID	LA-523-456	U	< 71.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 C	IPP .	534-52-1	4,6-Dinitro-2-methylphenol	SOLID	LA-523-456	U.	< 710	ug/kg	1.00	7,1e+02	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 0	PP .	101-55-3	4-Bromophenyl-phenylether	SOLID	LA-523-456	U	< 71.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
_W030000159	B16RX8 C	IPP .	59-50-7	4-Chloro-3-methylphenol	SOLIO	LA-523-456	Ü	< 71.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RX8	iPP	106-47-8	4-Chloroaniline	SOLID	LA-523-456	U	< 99.0	ug/kg	1.00	99	04/18/03	04/04/03	04/04/03
W0300001E9	B168X8 C	IPP	7005-72-3	4-Chlorophenyl-phenylether	SOUD	LA-523-456	Ų	< 71.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 6	PP .	100-01-6	4-Nitroaniline	SOLID	LA-523-456	U	< 260	ug/kg	1.00	2.6e + 02	04/18/03	04/04/03	04/04/03
_wo30000159		PP .	100-02-7	4-Nitrophenol	SOLIC	LA-523-456	υ	< 690	ug/kġ	1.00	6.9s ± 02	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 0	SPP	83-32-9	Acenaphthene	SOLID	LA-523-456	U	< 71.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
~ ₩030000159	BIGRX8 (IPP	208-96-8	Acenaphthylene	SOLID	LA-523-456	u	< 85.0	ug/kg	1.00	85	04/18/03	04/04/03	04/04/03
W030000159	B16RX8	3PP	120-12-7	Anthracena	SOLID	LA-523-456	U	< 71.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 (IPP .	56-55-3	Benzo(a)anthracene	SOLID	LA-523-456	U	< 71.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 6	IPP .	50-32-8	Benzo(a)pyrene	SOLID	LA-523-456	U	< 71.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 (iPP	205-99-2	Benzo(b)fluoranthene	SOLID	LA-523-456	Ü	< 71.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 C	iPP	191-24-2	Benzo(g,h,i)perylene	SOLID	LA-523-456	U	< 71.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 (iPP .	207-08-9	Banza(k) liuoranthene	SOLID	LA-523-456	U	< 71.0	ug/kg	1 00	71	04/18/03	04/04/03	04/04/03

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Report W004/ver. 5.1

Ground Water Protection Program

Attention: Project:

Steve Trent

F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

	· ·	105-000. 200-1 11	2/1 // 7		WSCF								
Sample #	Client 1D	CAS#	Test Performed	Matrix	Method	RO	Result	Unit	DF	MDL	Analyze	Sample	Receive
W030000159	B16RX8 GPP	117-81-7	Bis (2-Ethylhexyl) phthalate	SOLID	LA-523-456		620	ug/kg	1.00	5,9e+02	04/18/03	04/04/03	04/04/03
W030000159	BIGRXB GPP	108-60-1	Bis(2-Chloro-1-methylene)	SOLID	LA-523-456	der bereit i 190	< 270	ug/kg	1.00	2.7e+02	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	85-68-7	Butylbenzylphthalate	SOLID	LA-523-456	i)	< 71.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RXB GPP	86-74-8	Carbazole	SOLID	LA-523-456	uma pi i da U	< 85.0	ug/kg	1.00	85	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	218-01-9	Chrysene	SOLID	LA-523-456	U	< 71.0	ug/kg	1.00	31	04/18/03	04/04/03	04/04/03
W030000159	B16RXB GPP	84-74-2	Di-n-butylphthalate	SOLID	LA-523-456	U U	< 92.0	ug/kg	1.00	92	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	117-84-0	Di-n-ootylphthalate	SOLID	LA-523-456	U	< 71.6	ug/kg	1.00		04/18/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	53-70-3	Dibenz(a,h)anthracene	SOLID	LA-523-456	u U	< 71.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
W030000159	B16AX8 GPP	132-64-9	Olbenzofuran	SOLID	LA-523-456	ÿ.	< 71.0	ug/kg	1.00	##	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	84-66-2	Diethylphthalate	SOLID	LA-523-456	В	1.10e+03	3 Uug/kg	1.00	2.0e+02	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	131-11-8	Dimethylphthalate	SOLID	LA-523-456	U .	< 71.0	⊔g/kg	1.00		04/18/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	206-44-0	Fluoranthene	SOLID	LA-523-456	U U	< 71.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	86-73-7	Fluorene	SOLID	LA-523-456	ΰ	< 71.0	ug/kg	1,00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	118-74-1	Hexachlorobenzene	SOLID	LA-523-456	U	< 71.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	87-68-3	Hexachlorobutadiene	SOLID	LA-523-456	Ü.	< 390	ug/kg	1,00	3.9e+02	D4/18/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	77-47-4	Hexachlorocyclopentadiene	SOLID	LA-523-456	U	< 330	ug/kg	1.00	3.3e+02	04/18/03	04/04/03	04/04/03
₩030000159	医抗性性性性 化铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁	67-72-1	Hexachloroethane	SOLID	LA-523-456	ΰ	< 500	ug/kg	1,00	5.0e+02	04/18/03	04/04/03	04/04/03
W030000159		193-39-5	Indeno(1,2,3-cd)pyrene	SOLID	LA-523-456	U	< 71.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
Owo30000159		78-59-1	isopharon a	SOLID	LA-523-456	U	< 71.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
W030000159		621-64-7	N-Nitroso-di-n-propylamine	SOLID	LA-523-456	U	< 71.0	ug/kg	1,00	71	04/18/03	04/04/03	04/04/03
₩ 30000159	B16AX8 GPP	86-30-6	N-Nitrosodiphenylamine	SOLID	LA-523-456	u	< 71.0	ug/kg	1 00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RXB GPP	91-20-3	Naphthalene	SOLID	LA-523-456	Ų	< 300	ug/kg	1.00	3.0e + 02	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	98-95-3	Nitrobenzene	SOLID	LA-523-456	υ	< 280	ug/kg	1:00	2.8e + 02	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	87-86-5	Pentachlorophenol	SOLID	LA-523-456	U	< 320	ug/kg	1.00	3.2e+02	04/18/03	04/04/03	04/04/03
W030000159	B16AXB GPP	85-01-8	Phenanthrone	SOLID	LA-523-456	U	< 71.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	108-95-2	Phenol	SOLID	LA-523-456	U	< 110	ug/kg	1.00	1.1e+02	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	129-00-0	Pyrene	SOLID	LA-523-456	U	< 71.0	ug/kg	1:00	71	04/18/03	04/04/03	04/04/03
			the state of the s		. Presente de la contrata del contrata de la contrata de la contrata del contrata de la contrata del contrata de la contrata de la contrata de la contrata del contrata de la contrata del contrata del contrata de la contrata de la contrata del contrata del contrata de la contrata del c		And the second second second	and the contract of the		TAPATO TO TO TO TATE TO TATE TO TATE	44.40.00.00.00.00.00		

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Report W004/ver, 5.1

Ground Water Protection Program

Attention: Project:

Steve Trent

F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

							WSCF								
	Sample #	Client ID)	CAS#	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
	W030000159	B16RX8	GPP	126-73-8	Tri-n-butylphosphate	SOLID	LA-523-456	J.	94.0	ug/kg	1,00	71	04/18/03	04/04/03	04/04/03
	W030000159	B16RX8	GPP	111-44-4	bis(-2-Chloroethyl)Eth	SOLID	LA-523-456	υ	< 250	ug/kg	1.00	2.6e+02	04/18/03	04/04/03	04/04/03
	<u>W0</u> 30000159	B16RXB	GPP	111-91-1	bis(2-Chloroethoxy)methane	SOLID	LA-523-456	u	< 120	ug/kg	1.00	1.2e+02	04/18/03	04/04/03	04/04/03
	W030000159	B16RX8	GPP	13966-29-5	U-234 by AEA	SOLID	LA-508-471	*****************	3.60	pCi/g		0.099	04/28/03	04/04/03	04/04/03
	W030000159	R16AX8	GPP	e.t.c	U-234 by AEA Total Cntg Error	SOLID	LA-508-471		22.0	%		0.0	04/28/03	04/04/03	04/04/03
	W030000159	B16RX8	GPP	15117-96-1	U-235 by AEA	SOLID	LA-508-471	*	0.420	pCi/g	************	0.093	04/28/03	04/04/03	04/04/03
	W030000159	B16RX8	GPP	E.T.C	U-235 by AEA Total Critig Error	SOLID	LA-508-471		38.0	%		0.0	04/28/03	04/04/03	04/04/03
	W030000159	B16RX8	GPP	24678-82-8	U-238 by AEA	SOLID	LA-508-471	reaction of the contraction of t	28.0	pCi/g		0.067	04/28/03	04/04/03	04/04/03
	W030000159	816RX8	GPP"	E,T,C	U-238 by AEA Total Cntg Error	SOLID	LA-508-471		19.0	%		0.10	04/28/03	04/04/03	04/04/03
	W030000159	B16RX8	GPP	75-35-4	1.1-Dichloroethene	SOLID	LA-523-455	U	< 2.10	ug/kg	1.00	2.1	04/16/03	04/04/03	04/04/03
	W030000159	816RX8	GPP	71-36-3	1-Butanol	SOLID	LA-523-456	U	< 21.0	ug/kg	1.00	21	04/16/03	04/04/03	04/04/03
	W030000159	B16RX8	GPP	71-43-2	Benzene	SOLID	LA-523-455	υ	< 2.10	ug/kg	1.00	2.1	04/16/03	04/04/03	04/04/03
	W030000159	B16RX8	GPP	108-90-7	Chlarobenżene	SOLID	LA-523-455	u	< 2.10	vg/kg	1.00	2.1	04/16/03	04/04/03	04/04/03
	W030000159	B16RX8	GPP	108-88-3	Taluene	SOLID	LA-523-455	U	< 2.10	ug/kg	1,00	2.1	04/16/03	04/04/03	04/04/03
,	W030000159	B16RX8	GPP	79-01-6	Trichloroethene	SOLID	LA-523-455	معا نا	< 2.10	ug/kg	1.00	2.1	04/16/03	04/04/03	04/04/03
	W030000159	B16RX8	GPP	8008-20-6	Kerosene	SOLID	NWTPH	U 1.	< 4.20e+03	ug/kg	1.00	4.2e+03	05/01/03	04/04/03	04/04/03
		B16RX8	GPP	68476-34-6	Total Pet. Hydrocarbons Diesel	SOLID	HYTWH	1 33	7.80a + 03	ug/kg	1.00	4:2e+03	05/01/03	04/04/03	04/04/03
	W030000159		GPP	84-15-1	ortho-Terphenyl	SOLID	NWTPH	100	2.00e + 04	ug/kg	1,00	2.1e+02	05/01/03	04/04/03	04/04/03
	W030000160	B16RX9	GPP	7664-41-7	Ammonia (N) by IC	SOLID	LA-503-401		6.79	ug/g	50.00	0.20	04/23/03	04/04/03	04/04/03
· '4 .		B16RX9	GPP	57-12-5	Cyanide by Midi/Spectrophotom	SOLID	LA-695-402	U	< 0.200	mg/kg	0.99	0.20	04/15/03	04/04/03	04/04/03
U	1 Mp300001 eo	B16RX9	GPP	TS	Percent Splids	SOLID	LA-519-412		94.1	- %		0.0	04/22/03	04/04/03	04/04/03
	to the first of a first order on the body	B16RX9	GPP	PH	pH Soil and Waste Measurement	SOLID	LA-212-411		9.59	pН		0.010	04/22/03	04/04/03	04/04/03
	W030000160	B16RX9	GPP	12587-46-1	Alpha by liquid scintillation	SOLID	LA-508-421		12.0	pCi/g		1.8	04/09/03	04/04/03	04/04/03
	W030000160	B16RX9	GPP		Alpha error by LC	SOLID	LA-508-421		50.0	96		0.0	04/09/03	04/04/03	04/04/03
	WD30000160	B16RX9	GPP	12587-47-2	Beta by liquid scintillation	SQLID	LA-508-421		35.0	pCi/g		3.4	04/09/03	04/04/03	04/04/03
	W030000160	B16RX9	GPP		Beta error by LC	SOLID	LA-508-421		31,0	96		0.0	04/09/03	04/04/03	04/04/03
	M030000160	B16RX9	GPP	540-51-2	2-Bromoethanol	SOLID	Organics		1,30e+0	l ug/kg		5.0e+03	D5/02/03	04/04/03	04/04/03

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Report W004/ver. 5.1

Ground Water Protection Program

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Attention:

Steve Trent

F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

rr	oject:	F03-006: 200-PW	-2/PW-4										
C	CI' ID	G10#		35	WSCF							- ·	
Sample #	Client ID	CAS # ·	Test Performed	Matrix	_Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
W030000160	HERETTER DER		Thorium by ICP-MS	SOLID	LA-505-412		2,73	ug/g	0.48	0.096	04/15/03	04/04/03	04/04/03
W030000160	B16RX9 GP	P 7440-61-1	Uranium by ICP-MS	SOLID	LA-505-412		130	ug/g	4.79	0.48	04/15/03	04/04/03	04/04/03
W030000160	B16RX9 GP	P 7440-62-2	Vanadium by ICP-MS	SOLID	LA-505-412		108	ug/g	4.79	1.9	04/15/03	04/04/03	04/04/03
W030000160	B16RX9 GP	P 7440-66-6	Zinc by ICP-MS	SOLID	LA-505-412		57.3	ug/g	4.79	19	04/15/03	04/04/03	04/04/03
_W030000160	B16AX9 GP	P TPH-G	Total Pet. Hydrocarbons Gas	SOLID	NWTPH	υI	< 250	ug/kg		2.5e+02	04/16/03	04/04/03	04/04/03
W030000160	816RX9 GP	P 13981-16-3	Pu-238 by AEA	SOLID	LA-508-471	บ	0.0200	pCi/g	o are a learn far	0.27	04/17/03	04/04/03	04/04/03
W030000160	B16RX9 GP	P E.T,C	Pu-238 by AEA Total Cntg Error	SOLID	LA-508-471		760	%		0.0	04/17/03	04/04/03	04/04/03
W030000160	B16RX9 GP	P £,T,C	Pu-239/240 AEA Total Cntg Err	SOLID	LA-508-471		120	%		0.0	04/17/03	04/04/03	04/04/03
W030000160	BIERX9 GP	PU-239/240	Pu-239/240 by AEA	SOLID	LA-508-471		0.0300	pCi/g		0.027	04/17/03	04/04/03	04/04/03
W030000160	B16RX9 GP	P 120-82-1	1,2,4-Trichlorobenzene	SOLID	LA-523-456	U	< 310	ug/kg	1.00	3.1e+02	04/22/03	04/04/03	04/04/03
M030000160	B16RX9 GP	P 95 50 1	1,2-Dighlorobenzene (SV)	SOLID	LA-523-456	Ŭ.	< 370	ug/kg	1.00	3.7e+02	04/22/03	04/04/03	04/04/03
W030000160	B16RX9 GP	P 541-73-1	1,3-Dichlorobenzene	SOLID	LA-523-456	U	< 330	ug/kg	1.00	3.3e+02	04/22/03	04/04/03	04/04/03
W030000160	B16RX9 GP	P 106-46-7	1.4-Dichlorobettzene (SV)	SOLID	LA-523-456	u	< 330	ug/kg	1,00	3,3++02	04/22/03	04/04/03	04/04/03
W030000160	B16RX9 GP	P 95-95-4	2,4,5-Trichlorophenol	SOLID	LA-523-456	U	< 76.0	ug/kg	1.00	76	04/22/03	04/04/03	04/04/03
W030000160	B16RX9 GP	P 88-06-2	2.4.6-Trichtorophenol	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W030000160		P 120-83-2	2,4-Dichlorophanol	SOLID	LA-523-456	U	< 83.0	ug/kg	1.00	83	04/22/03	04/04/03	04/04/03
₩030000160	B16RX9 GP	P 105-67-9	2.4-Dimethylphenol	SOLID	LA-523-456	V	< 69,0	ug/kg	1,00	69	04/22/03	04/04/03	04/04/03
W030000160		P 51-28-5	2,4-Dinitrophenol	SOLID	LA-523-456	U	< 230	ug/kg	1.00	2.3e+02	04/22/03	04/04/03	04/04/03
W030000160	B16RX9 GP	P 121-14-2	2.4-Dinitrotoluene	SOLID	LA-523-456	Ü	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W030000160	B16RX9 GP	P 606-20-2	2,6-Dinitrotoluene	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W030000160	B16RX9 GP	P 111-76-2	2-Butoxyethanol	SOLID	LA-523-456	U	< 100	ug/kg	1.00	1.0e+02	04/22/03	04/04/03	04/04/03
W030000160	B16RX9 GP	P 91-58-7	2-Chloronaphthalene	SOLID	LA-523-456	U	< 83.0	ug/kg	1.00	83	04/22/03	04/04/03	04/04/03
W030000160	B16RX9 GP	P 95-57-8	2 Chlorophenol	SOLID	LA 523-456	Ü	< 150	ug/kg	1.00	1.56+02	04/22/03	04/04/03	04/04/03
W030000160	B16RX9 GP	P 91-57-6	2-Methylnaphthalene	SOLID	LA-523-456	under er in	< 190	ug/kg	1.00	1,9e+02	04/22/03	04/04/03	04/04/03
W030000160	B16RX9 GP	P 95.48-7	2-Methylphenol	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W030000160	B16RX9 GP	P 88-74-4	2-Nitroaniline	SOLID	LA-523-456		< 69.0	ug/kg	1.00	69			04/04/03
W030000160	B16RX9 GP	P 88-75-5	2-Nitrophenol	SOLID	LA-523-456	and the second	< 180	ug/kg	1.00	1.8e ± 02	04/22/03		early and the second
	PER ATT A REPORT A PER ATT A PORT	strateste agatot trate e et et et et els els tratest, de tratest et els els els els estatest. (2, 0 a els 14) b		an istinii		HET: PROPE	adella Hallia			er distint		្រុមប្រជាជាធ្វើ	er webbit

MDL=Minimum Detection Limit

B - The analyte < the RDL but > = the IDL/MDL (inorganic)

RQ=Result Qualifier

J - Estimated Value

X - Other flags and notes described in the comments/narrative.

DF=Dilution Factor

* - Indicates results that have NOT been validated; + - Indic

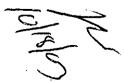
+ - Indicates more than six qualifier symbols

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Ground Water Protection Program

E - Analyte is an estimate, has potentially larger errors

U - Analyzed for but not detected above limiting criteria.



Attention: Project:

Steve Trent

F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

* 1	oject.	1 05-00	JO. 200-1 11	-2/1 11-1										
Sample #	Client II)	CAS#	Test Performed	Matrix	WSCF Method	RO	Result	Unit	DF	MDL	Analyze	Sample	Receive
W030000160		GPP	108-39-4	3 & 4 Methylphenol Total	SOLID	LA-523-456		 		1.00	1.2e+02	04/22/03		
W030000160		GPP	91-94-1	3,3'-Dichlorobenzidine	SOLID	LA-523-456	arar awa	< 120 < 83.0	ug/kg	anddana (1)		04/22/03		Hadri dalila
W030000160		GPP	99 09-2	3.Nitroaniline		والمواجو مواجو مرامو والواد والمرام والمواج	determinante de	detekninger bedek beleit	ug/kg	1.00	83	04/22/03	ara ar an ar	and a series of
W030000160	प्रमाणका अपन	GPP	534-52-1	4,6-Dinitro-2-methylphenol	SOLID		, y	< 69.0	ug/kg	1.00	69	444644644		
W030000160		GPP.	101-55-3		SOLID	LA-523-456		< 690	ug/kg	1.00	6.9e + 02	04/22/03		*******
W030000160		GPP	59-50-7	4-Bromophenyl-phenylether	SOLID	LA-523-456	SEAST DEFE	< 69.0	ug/kg	1,00	69	04/22/03		Talahara da ka
W030000160			e era erananananan	4-Chloro-3-methylphenol	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03	مداولا والمارات والمارات	
W030000160	P\$P\$P*P*P\$P\$P*P\$P\$P\$P\$P\$	GPP	106-47-8	4-Chloroaniline	SOLID	LA-523-456	18-4-18-18-1	< 97.0	ug/kg	1.00	97	04/22/03		120124515-111
W030000160		- GPP B⊠⊒⊈BUSBSBBBB UBBUBU	7005-72-3	4-Chlorophenyl-phenylether	SOLID	LA-523-456	and an experience of	< 69.0	ug/kg	1.00	69	04/22/03	erenere descendante	ere ere ere ere er
151515151515151515151515151		GPP	100-01-6	4 Nitroaniline	SOLID	LA-523-456		< 260	ug/kg	1,00	2.6+02	04/22/03		property and the
W030000160	A Comment of the comment	GPP SEESSANDONES AUG	100-02-7	4-Nitrophenol	SOLID	LA-523-456	. V control control control co	< 670	ug/kg	1.00	6.7e+02	04/22/03	وروروني وأدرق ورور	Jana Langaran Langaran
W030000160		GPP	83-32-9	Acenaphthene	SOLID	LA-523-456		< 69.0	ug/kg	1.00	69	04/22/03	energia en la companiona	steme nee
W030000160	*	GPP Hildsgrifteenissen entdeelin	208-96-8	Acenaphthylene	SOLID	LA-523-456		< 83.0	ug/k g	1.00	83	04/22/03		and the second second
M030000160	Print codesing	GPP.	120-12-7	Anthracene	SOLID	LA-523-456	V	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W030000160		GPP	56-55-3	Benzo(a)anthracene	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W030000160		GPP	50-32-8	Benzo(a)pyrene	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
₩030000160	en de les energies de la company de la c	GPP	205-99-2	Benzo(b) fluoranthene	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
₩030000160	海海南部 医二氯甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基	GPP	191-24-2	Benzolg, f. il perylene	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
◯ W030000160	システィング・フェア かたいきゅうしき かんしゅう	GPP	207-08-9	Benzo(k)fluoranthene	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	117-81-7	Bis (2-Ethylhexyl) phthalate	SOLID	LA-523-456	U	< 580	ug/kg	1.00	5,8e+02	04/22/03	04/04/03	04/04/03
W030000160	e e e espera a a aspesa.	GPP	108-60-1	Bis (2-Chloro-1-methylens)	SOLID	LA-523-456	U	< 260	ug/kg	1,00	2.6e + 02	04/22/03	04/04/03	04/04/03
V wo30000160	B16RX9	GPP	85-68-7	Butylbenzylphthalate	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	86-74-8	Carbazole	SOLID	LA-523-456	υ	< 83.0	ug/kg	1.00	83	04/22/03	04/04/03	04/04/03
0910000160	B16RX9	GPP	218-01-9	Chrysene	SOLID:	EA-523-456	Ü	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	84-74-2	Di-n-butylphthalate	SOLID	LA-523-456	U	< 90.0	ug/kg	1.00	90	04/22/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	117-84-0	Di-n-octylphthalate	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	53-70-3	Dibenz(a,h)anthracene	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	132-64-9	Dibenzofuran	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
	And the Control of	1.1	The state of the state of the state of	 ************************************	2.0.042424040404040404	· Pro 12 · 2 · 2 · 4 · 1 · 1 · 1 · 2 · 4 · 4 · 4 · 5 · 5 · 5 · 6 · 6 · 6 · 6 · 6 · 6 · 6	44444 0.0000000	in defending by the per-	promoter special property	-1-10-10-10-10-10-10-10-10-10-10-10-10-1	kon interespecial of other products	provinci interestantes	strategies and an	production and i

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Report W004/ver. 5.1

Ground Water Protection Program



Attention: Project:

Steve Trent

F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

	-					WSCF						
Sample #	Client I	D _	CAS#	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	Analyze Sample Receive
W030000160	B16RX9	GPP	84-66-2	Diethylphthalate	SOLID	LA-523-456	В	1.00e+03	Uug/kg	1.00	1.9e + 02	04/22/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	131-11-3	Dimethylphthalate	SOLID	LA-523-456	U U	< 69.0	ug/kg	1.00	69	04/22/03 04/04/03 04/04/03
M030000160	B16RX9	GPP	206-44-0	Fluoranthene	SOLID	LA-523-456	Ü	< 69.0	ug/kg	1.00	69	04/22/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	86-73-7	Fluorene	soLID	LA-523-456	U	< 69.0	ug/k g	1.00	69	04/22/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	118-74-1	Hexachlorobenzene	souid	LA-523-456	ָּט :	< 69.0	ug/kg	1.00	69	04/22/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	87-68-3	Hexachlorobutadiene	SOLID	LA-523-456	U U	< 380	ug/kg	1.00	3.8e+02	04/22/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	77-47-4	Hexachlorocyclopentadiene	SOLID	LA-523-456	U	< 330	ug/kg	1.00	3.3e+02	04/22/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	67-72-1	Hexachloroethane	SOLID	LA-523-456	U	< 490	ug/kg	1.00	4.9e+02	04/22/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	193-39-5	Indena (1, 2,3-cd) pyrene	SOLID	LA-523-456	U	< 69.0	ug/kg	1,00	69	04/22/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	78-59-1	Isophorone	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03 04/04/03 04/04/03
M030000160	B16RX9	GPP	621-64-7	N-Nitroso-di-n-propylamine	SOLID	LA-523-456	. U	< 69.0	ug/kg	1.00	. 69	04/22/03 04/04/03 04/64/03
W030000160	B16RX9	GPP	86-30-6	N-Nitrosodiphenylamine	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	91-20-3	Naphthalene	SOLID	LA-523-456	U	< 300	ug/kg	1,00	3.0e+02	04/22/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	98-95-3	Nitrobenzene	SOLID	LA-523-456	U	< 270	ug/kg	1.00	2.7c+02	04/22/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	87-86-5	Pentachlorophenol	SOLID	LA-523-456	U	< 310	ug/kg	1.00	3.1e+02	04/22/03 04/04/03 04/04/03
₩030000160	B16RX9	GPP	85-01-8	Phenanthrens	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03 04/04/03 04/04/03
0300001 60	B16RX9	GPP	108-95-2	Phenol	SOLID	LA-523-456	ប	< 100	ug/kg	1.00	1.0e + 02	04/22/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	129-00-0	Pyrene	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03 04/04/03 04/04/03
₩030000160		GPP	126-73-8	Tri-n-buty/phosphate	SOLID	LA-523-456	J.	100	ug/kg	1.00	69	04/22/03 04/04/03 04/04/03
rada		GPP	111-44-4	bis(-2-Chloroethyl)Eth	SOLID	LA-523-456	U	< 260	ug/kg	1.00	2.6e + 02	04/22/03 04/04/03 04/04/03
M030000160	B16RX9	GPP	111-91-1	bis (2-Chlorpethoxy) methane	SOLID	LA-523-456	U	< 120	ug/kg	1,00	1.2e+02	04/22/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	13966-29-5	U-234 by AEA	SOLID	LA-508-471		5.40	pCi/g		0.095	04/28/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	E,T,C	U-234 by AEA Total Critg Error	SOLID	LA-508-471		21.0	%		0.0	04/28/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	15117-96-1	U-235 by AEA	SOLID	LA-508-471		0.650	pCi/g		0.030	04/28/03 04/04/03 04/04/03
W030000160	B16AX9	GPP	E,T,C	U-235 by AEA Total Critg Error	SQLID	LA-508-471		32.0	*		0.0	04/28/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	24678-82-8	U-238 by AEA	SOLID	LA-508-471		41.0	pCi/g	en e efektivet i ve	0.11	04/28/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	E,T,C	U-238 by AEA Total Cntg Error	SOLID	LA-508-471	中建门间	20.0	%		0.10	04/28/03 04/04/03 04/04/03

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Report W004/ver. 5.1 Ground Water Protection Program E - Analyte is an estimate, has potentially larger errors

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Attention: Project:

Steve Trent

F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

						WSCF							
Sample #	Client II)	CAS#	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	AnalyzeS	Sample Receive
W030000160	B16RX9	GPP	75-35-4	1:1-Dichloroethene	SOLID	LA-523-455	U	< 2,00	ug/kg	1,00	2.0	04/16/03 (4/04/03 04/04/03
W030000160	B16RX9	GPP	71-36-3	1-Butanol	SOLID	LA-523-455	U	< 20.0	ug/kg	1.00	20	04/16/03 (04/04/03 04/04/03
W030000160	816RX9	GPP	71-43-2	Benzene	SOLID	LA-523-455	U	< 2.00	ug/kg	1,00	2.0	04/16/03	4/04/03 04/04/03
W030000160	B16RX9	GPP	108-90-7	Chlorobenzene	SOLID	LA-523-455	U	< 2.00	ug/kg	1.00	2.0	04/16/03	04/04/03 04/04/03
W030000160	B16AX9	GPP	108-88-3	Toluene	SOLID	LA-523-455	Ù.	< 2,00	ug/kg	1,00	2.0	04/16/03	×4/04/03 04/04/03
W030000160	B16RX9	GPP	79-01-6	Trichlorgethene	SOLID	LA-523-455	U	< 2.00	ug/kg	1.00	2.0	04/16/03	04/04/03 04/04/03
W030000160	B16RX9	GPP	8009-20-6	Kerosene	SOLID	NWTPH	υJ	< 4.20e+0	3 ug/kg	1.00	4,2e+03	05/01/03	04/04/03 04/04/03
W030000160	B16RX9	GPP	68476-34-6	Total Pet. Hydrocarbons Diesel	SOLID	NWTPH	υ <u>π</u>	< 4.20e+0	3 ug/kg	1.00	4.2e+03	05/01/03	04/04/03 04/04/03
W030000160	B16RX9	GPP	84-15-1	ortho-Terpheny(SOLID	NWTPH	UI	2.20a+0	4 ug/kg	1.00	2:10+02	05/01/03	04/04/03 04/04/03

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MDL=Minimum Detection Limit RQ=Result Qualifier

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Report W004/ver. 5.1

Ground Water Protection Program

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Sample Delivery Group	WSCF20030461
Sample Matrix	Soil
Sample Visual	Brown
SAF Number	F03-006
Data Deliverable	Summary Report

Introduction

Two (2) soil samples (B16RX8, B16RX9) from the GPP was received at the WSCF Laboratory on April 4, 2003. The sample was analyzed for those analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Groundwater Protection Program-Letter of Instruction*, referenced in the cover letter.

The narrative (Attachment 1) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 2) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information. Copies of the chain of custody and Request for Sample Analysis forms are included as Attachment 3.

Analytical Methodology for Requested Analyses

- ICP-MS Metals by EPA Method 200.8 and ICP-AES Metals by EPA SW-846 Method 6010A. Analytical work was performed with no deviations to the approved method.
- VOA's by EPA SW-846 Method 8260A. Analytical work was performed with no deviations to the approved method. The compound 1-Butanol requested under EPA SW-846 Method 8015 was reported under this method.
- Semi-VOA's by EPA SW-846 Method 8270B. Analytical work was performed with no deviations to the approved method.
- Alcohols and Glycols by EPA SW-846 Method 8015. Analytical work was performed
 with no deviations to the approved method. The compound 1-Butanol requested under
 this method was reported under EPA SW-846 Method 8260A.
- WTPH-D by WDOE Method NWTPH-Dx. Analytical work was performed with no deviations to the approved method.
- WTPH-G by WDOE Method NWTPH-Gx. Analytical work was performed with no deviations to the approved method.

- IC Anions and Ammonium by EPA SW-846 Method 300.0 and 300.7. Analytical work was performed with no deviations to the approved method for Ammonium, but a deviation was required for the Anions (see comments below).
- The pH by EPA Method 150.1. Analytical work was performed with no deviations to the approved method.
- Percent Solids by EPA Method 160.3. Analytical work was performed with no deviations to the approved method.
- Cyanide by EPA SW-846 Method 9010. Analytical work was performed with no deviations to the approved method.
- All RadChem analyses (TA/TB, AEA's, GEA) were run by internal WDOE accredited WSCF procedures. Analytical work was performed with no deviations to the approved method.

Comments

PCB's – This analysis was originally on the Sample Chain of Custody when received at the WSCF Laboratory, but the client later requested the analysis not be run.

ICP-MS and ICP-AES Metals — The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-27, 2-28, 2-29, 2-30, and 2-48 for QC details.

VOA's – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-36, 2-37 and 2-38 for QC details. Compounds listed on the tentatively identified peak report with an "N" qualifier have been identified with the program used to interpret the raw data.

Semi-VOA's – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-44, 2-45, 2-46 and 2-47 for QC details. Compounds listed on the tentatively identified peak report with an "N" qualifier have been identified with the program used to interpret the raw data.

Alcohols and Glycols – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-37 for QC details.

WTPH-D - The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-40 for details.

WTPH-G – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-39 for details.

IC Anions – The client requested hold time(s) for this analysis was not met. The client was notified and requested WSCF to continue with this analysis. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-33, 2-34 and 2-36 for QC details.

NH4 – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-38 for QC details.

The pH – Per the direction of the chain of custody, the pH was completed within 24 hours of sampling.

Percent Solids – PCB's, VOA's, Semi-VOA's, Alcohols and Glycols, WTPH-G and WTPH-D analytical results were corrected for percent solids. All other analytical results were reported for the sample as received.

CN – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-26 for QC details.

RadChem – There are no hold times associated with these WDOE accredited methods. Except for GEA, a Laboratory Control Sample and Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-31, 2-32, and 2-35 for QC details.

This Summary Report is in compliance with the SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the WSCF Laboratory Malytical Manager and Client Services, as verified by the following signature.

Troy Dale

WSCF Production Control

Abbreviations

Hg - mercury

IC - ion chromatography

ICP - inductively coupled plasma

ICP/AES - ICP/atomic emission spectroscopy

ICP/MS - ICP/mass spectrometry

Total U - total uranium

AT/TB - total alpha/total beta

AEA - Alpha Energy Analysis

WTPH-G - Total Hydrocarbons-Gasoline

Am - americium

Cm - curium

Pu – plutonium

Np - neptunium

GEA – gamma energy analysis

H3 - Tritium

Sr - Strontium 89, 90

WTPH-D - Total Hydrocarbons-Diesel

TSS - Total Suspended Solids

FH-Central Plates	iu Project	CI	CHAIN OF CUSTODY/SAMPLE ANALYSIS							F03-006-014 Page 1				of 1
Collector Johansen/Pope/Pfister		Compa	iny Contact Hulstrom	Telephane Na. 373-3928				Project Coor TRENT, SJ	Price Code 8N		Data Tur	naround		
Project Designation 200-PW-2/200-PW-4 OU - B	orehole Soil Sampling		Sampling Location 216-A-19 (C3245) 22.5-25.0 ft						SAF No. F03-006			Air Quality 📋		Days
Ice Chest No. SMC -	-69		Logbook No. F-N-3361	COA 117504ES	DA Method of Shipm				 					
Shipped To Waste Sampling & Character	rization	Offsite	Property No.	NIA				Bill of Lading/Air Bill No.						
POSSIBLE SAMPLE HAZA		Preservation	Cool 4C	Cool 4C	None	None			'		,			
Special Handling and/or S	Inrese		Type of Container	aG	Gs*	P	Snap V	ial	-					
- Income standing and of	icor age		No. of Container(s)		3	ı	1							
G			Volume	250mL	40mL	500mL	60mL							
00023	Sample analy	SiS		See item (1) in Special Instructions.	See item (2) is Special Instructions.	Special	Activity :	Scan						
<u>ŭ</u> 20	1030461									{				
Sample No.	Matrix *	Sample Date	Sample Time						图 报题	學學	10 77	0.191	海发素	1068
B16RX8 W 536 20159 B16RX9 W 53000160	SOIL	4-4-0		<u> </u>	X	I ×	\rightarrow			}-		ļ	 	
2707013 (2) 5 3 20 21 40 5	SOIL	4-4-0	(3) /348	 × -	 ×	1×	×					 	 	
					 			 -	- 			 	 	ļ — —
		· · · · · · · · · · · · · · · · · · ·		1	1	 			_			 -	 	
CHAIN OF POSSESSIO	14 Date Time 142	1 Post	ed in A	Ate Time U 63 14	50 (I)	** The laboratory is to report both kerosene and diesel range compounds from the WTPH-D analysis. 5-5 SE-100 SE-1								Matrix * S=Soil SE=Softment SO=Solid
Relinquished By/Removed From	Date/Time	Received By/Stor		(2)	TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G; PCBs - 8082 (2) Alcohols, Glycols, & Ketones - 8015 [1-Butanol, Diethyl ether, Ethylene glycol, Methanol] (3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155];									
Relinquished By/Removed From	Date Time	Received By/Stor	red In		Gamma Spec - Add-on {Antimony-125, Cesium-134, Tin-126}; Isotopic Radium (Radium-226, Radium- 228); Isotopic Plutonium; Americium-241; Isotopic Uranium; Trace Elements ICP/MS - 200.3									
Relinquished By/Removed From	Date/Time	Received By/Stor	red In I	Date/Time	Nicl	(Complete) {Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Uranium}; ICP Metals - 6010A (Add-on) (Bismuth, Boron); IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Cyanide (Total) -							T=Tissee WI=Wipe L=Liquid	
Relinquished By/Removed From Date/Time Reco			red In I		335.2; Cations (IC) - 300.7 (Nitrogen in authonium); pH (Soil) - 9045							. 0.12)	V=Vegetation X=Other	
Relinquished By/Removed From	Date/Time	Received By/Stor	red In I	Date/Time										
LABORATORY Received By SECTION	,			T	itle								Date/Time	 _
FINAL SAMPLE Disposal M	ethod				·· <u>·</u>	Dispo	sed Dy					-	Date/Time	·

Appendix 5

Data Validation Supporting Documentation

					
VALIDATION LEVEL:	A	В	(c)	D	E
PROJECT: 20	10-PW-2/200	1-PW4	DATA PACKAG	E: WSCF260	30461
VALIDATOR:	TU	LAB: WS	CF	DATE: O	18/03
CASE:			SDG:	30461	
		ANALYSES	PERFORMED	<u> </u>	
SW-846 8260		SW-846 8260 (TCLP)	6W-846 8270		SW-846 8270 (TCLP)
				(8015)	
SAMPLES/MATE	ИX				·
BILER	XX (BILRX9			
					<u> </u>
					<u> </u>
					Sorl
Comments:					103 190 101
					
			<u> </u>	····	
. INSTRUM	ENT TUNING A	ND CALIBRATIO	N (Levels D and E	()	(1
				••••••	
				*******************	· · · · · · · · · · · · · · · · · · ·
					f
					1
				***************************************	1
					Yes No N/
omments:					

3. BLANKS (Levels B, C, D, and E)	
Calibration blanks analyzed? (Levels D, E)	Yes No NU
Calibration blank results acceptable? (Levels D, E)	Yes No N/A
Laboratory blanks analyzed?	Yes No N/A
Laboratory blank results acceptable?	
Field/trip blanks analyzed? (Levels C, D, E)	Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E)	Yes No N77
Transcription/calculation errors? (Levels D, E)	Yes No OL
Comments: dically phalate in Blank - O both	
artho terplery	Telesta
	1) . 5:0
	NO FB
4. ACCURACY (Levels C. D. and E)	_
4. ACCURACY (Levels C, D, and E) Surrogates/system monitoring compounds analyzed?	Na NI
Surrogate/system monitoring compound recoveries acceptable?	
Surrogates traceable? (Levels D, E)	
Surrogates expired? (Levels D, E)	\ \sigma_{\sigma}
MS/MSD samples analyzed?	
MS/MSD results acceptable?	Yes No N/
MS/MSD standards NIST traceable? (Levels D, E)	
MS/MSD standards? (Levels D, E)	Yes No N/
LCS/BSS samples analyzed?	V AVE AND NU
LCS/BSS results acceptable?	res No N/A
Standards traceable? (Levels D, E)	
Standards expired? (Levels D, E)	
Transcription/calculation errors? (Levels D, E)	₩ `
Performance audit sample(s) analyzed?	/ –
Performance audit sample results acceptable?	Yes No (N/)
Comments: NO 8015 Surrogate - J ATTOHA	Ne BAS
No teroson us hiso I all 1/2/21	
No Direct 105 - Jall 19 11/16	
	

Rev. 0

5. PRECISION (Levels C, D, and E)	
MS/MSD samples analyzed?	Yes No N/A
MS/MSD RPD values acceptable?	
MS/MSD standards NIST traceable? (Levels D, E)	
MS/MSD standards expired? (Levels D, E)	
Field duplicate RPD values acceptable?	/ ^
Field split RPD values acceptable?	744
Transcription/calculation errors? (Levels D, E)	
Comments:	
6. SYSTEM PERFORMANCE (Levels D and E)	
Internal standards analyzed?	1.1
linternal standard areas acceptable?	I 1
Internal standard retention times acceptable?	u de la companya de
Standards traceable?	1
Standards expired?	
Transcription/calculation errors?	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Comments:	
7. HOLDING TIMES (all levels)	·
Samples properly preserved?	Yes No N/A
Sample holding times acceptable?	
Comments:	

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION L	IMITS (all levels)
Compound identification acceptable? (Levels D, E)	Yes No NA
Compound quantitation acceptable? (Levels D, E)	Yes No 🕅
Results reported for all requested analyses?	
Rresults supported in the raw data? (Levels D, E)	
Samples properly prepared? (Levels D, E)	
Laboratory properly identified and coded all TIC? (Levels D, E)	Yes No N/A
Detection limits meet RDL?	Yes) No N/A
Transcription/calculation errors? (Levels D, E)	Yes No NA
Comments:	·
9. SAMPLE CLEANUP (Levels D and E)	1 1
GPC cleanup performed?	Yes No N/A
GPC check performed?	Yes No N/A
GPC check recoveries aceptable?	Yes No N/A
GPC calibration performed?	Yes No N/A
GPC calibration check performed?	Yes No N/A
GPC calibration check retention times acceptable?	Yes No N/A
Check/calibration materials traceable?	Yes No N/A
Check/calibration materials Expired?	
Analytical batch QC given similar cleanup?	Yes No N/A
Transcription/Calculation Errors?	Yes No N/A
Comments:	

Appendix 6

Additional Documentation Requested by Client

SDG Number: WSCF20030461

Matrix: SOLID

Test: SW-846 8270B Semi-Vols

SAF Number: F03-006

Sample Date: 04/04/03 Receive Date: 04/04/03

QC					Analysis	Lower	Upper
Type	Analyte	CAS#	Results	Units	Date	Limit	Limit
						131111t	Limit

Lab ID:	W030000159	
DATCU	OC ACCOCIATION	STATE

Lab II							
BATC	H QC ASSOCIATED WIT	'H SAMPLE					
MS	1,2,4-Trichlorobenzene	120-82-1	93,400	% Reco	v 04/18/03	46.000	107,000
MS	1,4-Dichlorobenzene (SV)	106-46-7	78.900	% Reco	v 04/18/03	30.000	96.000
MS	2,4-Dinitratoluene	121-14-2	74.600	% Reca	v 04/18/03	59.000	106,000
MS	2-Fluorophenal Surr	367-12-4	79.700	%Recov	/e 04/18/03	42.000	105.000
MS	Acanaphthene	83-32-9	86,900	% Reco	v :04/18/03	61,000	116.000
MS	4-Chloro-3-methylphenol	59-50-7	93.200	% Raco	v 04/18/03	61,000	106.000
MS	2-Chlorophenol	95-57-8	74.500	% Reco	v: 04/18/03	66 000	106,000
MS	N-Nitroso-di-n-propylamine	621-64-7	84.900	% Reco	v 04/18/03	71.000	114.000
MS	2-Fluorobiphenyl Surr	321-60-8	88.700	. %Racov	e 04/18/03	56,000	122,000
M\$	Phenol	108-95-2	70.900	% Recov	v 04/18/03	42.000	111.000
MS	Nitrobenzene-d5 Sürr	4165-60-0	89.400	%Recov	e_04/18/03	64.000	111,000
MS	4-Nitrophenol	100-02-7	78.200	% Recov	04/18/03	32.000	118.000
MS	Pentachlorophenol	87-86-5	85,900	9498100000000000000000000000000000000000	/ 04/18/03	62,000	114.000
MS	Phenol-d5 Surr	4165-62-2	78.000	accorde accord	o 04/18/03	54.000	120.000
MS	Pyrane	129-00-0	91.100	Right Control	/ 04/18/03	66.000	118.000
MS	2,4,6-Tribrornophenol Surr	118-79-6	105,000	www.com.com.com.com.com	04/18/03	24.000	122.000
MS	Terphenyl-d14 Surr	98904-43-9	96,400	100000000000000000000000000000000000000	e 04/18/03	35,000	150.000
MSD	1,2,4-Trichlorobenzene	1 20-82-1	92.400	dedennesent seet tipe	04/18/03	46,000	107.000
MSD:	1,4-Dichlorabenzene (SV)	106-46-7	81.700	v6059,1000000pcmp	04/18/03	30.000	96,000
MSD	2,4-Dinitrotoluene	121-14-2	75.700	e victoroonaa araa	04/18/03	59.000	106.000
MSD. MSD	2-Fluorophenel Surr	367-12-4	73.760	8089840000004. Priva	04/18/03	42,000	105.000
MSD	Acenaphthene	83-32-9	85.800	and an application of the	04/18/03	61.000	116.000
MSD	4-Chloro-3-methylphenol	59-50-7	88.100	X 21/000000000000000000000000000000000000	04/18/03	61,000	106,000
MSD	2-Chlorophenol N-Nitroso-di-n-propylamine	95-57-8	73.100	entra semanta de la como	04/18/03	66.000	106.000
MSD	2-Fluorobiphenyl Surr	621-64-7	84,400	9006 \$100 40 00 100 000.	04/18/03	71.000	114.000
MSD	Phenol	321-60-8 108-95-2	87.300 70.600	ente di antigonia di la constanti	04/18/03 04/18/03	56.000 42.000	122.000
MSD	Nitrobenzene-d5 Surr	4165-60-0	70.800 85.200	000000000000000000000000000000000000000	04/18/03		111,000
MSD	4-Nitrophenol	100-02-7	78.700	station of the control	04/18/03	64.000 32,000	111.000
MSD	Pentachiorophenol	87-86-5	88.300	200000000000000000000000000000000000000	04/18/03	62.000	118.000
MSD	Phenol-d5 Surr	4165-62-2	80.800	Magazaranakananan i	04/18/03	54,000	114.000 120.000
MSD	Pyrene	129-00-0	87.600	986 (1999 (1999 (1999 (1999) (1999	04/18/03	66.000	118.000
MSD	2,4,6-Tribromophenol Surr	118-79-6	102,000	age to the rest of the rest	04/18/03	24.000	122.000
MSD	Terphenyl-d14 Surr	98904-43-9	92.100	566 (0.66669),	04/18/03	35.000	150.000
SPK-RPD	1,2,4-Trichlorobenzene	120-82-1	1.078	RPD	04/18/03	0.000	20.000
SPK-RPD	1,4-Dichlorobenzene (SV)	106-46-7	3.487	RPD	04/18/03	0.000	20.000
SPK-RPD	2,4-Dinitrotaluene	121-14-2	1,464	RPD	04/18/03	0.000	20.000
SPK-RPD	2-Fluorophenol Surr	367-12-4	92.472	%Recove		42.000	105.000
SPK-RPD	Acenaphthene	83-32-9	1.274	RPD	04/18/03	0.000	20,000
SPK-RPD	4-Chloro-3-methylphenol	59-50-7	5.626	RPD	04/18/03	0.000	20.000
SPK-RPD	2-Chlorophenol	95-67-8	1.897	RPD	04/18/03	0.000	20.000
SPK-RPD	N-Nitroso-di-n-propylamine	621-64-7	0.591	RPD	04/18/03	0,000	20.000

Report w13q/rev.5.1 p 19 30-may-2003 13:21:29

SDG Number: WSCF20030461

Matrix: SOLID

Test: SW-846 8270B Semi-Vols

SAF Number: F03-006 Sample Date: 04/04/03 Receive Date: 04/04/03

QC						Analysis	Lower	Upper
Туре	Analyte		CAS#	Results	Units	Date	Limit	Limit
SPK-RPD	2-Fluorobiphenyl	Surr	321-60-8	98.422	%Recove	04/18/03	56.000	122.000
SPK-RPD	Phenol		108-95-2	0.141	RPD	04/18/03	0.000	20.000
SPK-APD	Nitrobenzene-d5	Sürr	4165-60-0	95,302	%Recove	04/18/03	64.000	111.000
SPK-RPD	4-Nitrophenol	observanna za zasoboro secución de los	100-02-7	0.637	RPD	04/18/03	0.000	20.000
SPK-RPD	Pentachlorophenol		87-86-6	2.765	RPD	04/18/03	0.000	20.000
SPK-RPD	Phanoi-d5	Surr	4165-62-2	103.590	%Recove	04/18/03	54,000	120.000
SPK-RPD	Pyrene		129-00-0	3.917	RPD	04/18/03	0.000	20.500
SPK-RPD	2.4,6-Tribromopheno	de la guarda de la companya	118-79-6	97.143	and the second second	04/18/03	24.000	122.000
SPK-RPD	Terphenyl-d14	Surr	98904-43-9	95,539	saa kaalaa daadada ka cu	04/18/03	35.000	150.000
SURR	2-Fluorophenol	Surr	367-12-4	73.100	and the second second	04/18/03	42.000	105.000
SURR	2-Fluorobiphenyl	Surr	321-60-8	98.700	opportunities (1900)	04/18/03	56.000	122,000
SURR	Nitrobenzene-d5	Surr	4165-60-0	85.500	and the second	04/18/03	64.000	111,000
SURR	Phenol-d5	Surr	4165-62-2	80,000	56 664 0000000000000000000000000000000000	04/18/03	54.000	120.000
SURR	2,4,6-Tribromophenol	55055555665656644444444441555566	118-79-6	85.600	SANTER METERS	04/18/03	24.000	122.000
SURF	Temphenyl-d14	Surr	98904-43-9	96,000	%Recove	04/18/03	35.000	150,000
Lab ID:	W03000016	n .						
	QC ASSOCIA		SAMPLE					
SURR	2-Fjuorophenol	Sur	367-12-4	82.700	%Recove	A. 100100		
SURR	2-Fluorobiphenyl	Surr	321-60-B	98.000	%Recove	sum a valada arestetus a de guloggia e constitutivo	42.000 56.000	105:000
SURR	Nitrobenzene-d5	Surr	4165-60-0	91.900	nasyensaya nasye e ah	04/22/03	64,000	122,000 111,000
SURR	COURT CARROLL STATE A SECRET SECRECAL CARR	Surr	4165-62-2	85.700	%Recove	tasusaa aa	54.000	120.000
SURA	2,4,6-Tribromophenal	50700 7760060 000000000000000000000000000	118-79-6	86.700	%Recove	SA Article and a service of the control of the cont	24.000	122,000
SURR	Terphenyl-d14	Surr	98904-43-9	104,000	%Racove	A46 876 och 46 och 86 (806 9 – 606)	35.000	150,000
BATCH	QC							
BLANK	1,2-Dichlorobenzene	(SV)	95-50-1	< 360	ug/Kg	04/18/03		
BLANK	1,2,4-Trichlorobenzen	вология (1 монекторо (1990 года или пол. В	1 20-82-1	< 290	ug/Kg	04/1B/03	2000-000-000-000-000-000-000-000-000-00	
BLANK	1,3-Dichlorobenzene		541-73-1	< 320	ug/Kg	04/18/03		
BLANK	1,4-Dichlorobenzene (SV)	106-46-7	< 310	ug/Kg	04/18/03	111111111111111111111111111111111111111	,
BLANK	2,4-Dichlorophenol		120-83-2	<.80	ug/Kg	04/18/03		
BLANK	2,4-Dinitrotoluene	rannon made i didicale e de la calega de la c	121-14-2	< 67	ug/Kg	04/18/03		
BLANK	2,4,5-Trichlorophenol		95-95-4	< 670	ug/Kg	04/18/03		
Service of the contraction of th	2,4,6-Trichlorophenal	etroeno, vicarius, comunicational	88-06-2	< 67	ug/Kg	04/18/03		
BLANK	2,4-Dimethylphenol		105-67-9	< .67	ug/Kg	04/18/03		
BLANK	2,6-Dinitrotoluena	Control Control Control Control Control	606-20-2	< 67	animanima na 200	04/18/03	Mario Course au antigant de la Mario Course de la Course d	r samon i communicio (mini inc. d. , seecus citarian seetti
BLANK	2-Butoxyethanol	4004648441 - Princesta rig ostan ino	111-76-2	2.0000000000000000000000000000000000000	SOUTH SOUTH SECTIONS ASSESSMENT	04/18/03		
NAC EXCESSOR CONTRACTOR CONTRACTOR	2-Chloronaphthalene	ra rate con en en escapaciones de la con-	91-58-7	n	era con account to	04/18/03	uu. 100 Managaan ya maa u 1000 00 100 00 0	
BLANK	2-Fluorophanol		367-12-4	LesiMessal Francisco de secución de de	%Recove		42.000	105.000
and a supply and the second	2-Methylnaphthalene	La Companya de Caractería de C	91-57-6	ran sa wasa wasana waka badan ka kata wa	valuossa	04/18/03		gaster
and the street transfer the fire	2-Methylphenal	open krisseppssop i deskalose asstelisto	95-48-7	o cara di gorda designade e i social de como de la como	300200000000000000000000000000000000000	04/18/03		
Angelia de la companya de la company	2-Nitroaniline	nar arabababababar era waxa	88-74-4	and a real control of the control of	ar formania monoro (000	04/18/03	20120.00000.0000.00 MM300.00000	
138 S. L. C. 175 HOWNOOD LAND.	2-Nitrophenol	en refrese consecutar or exists	88-75-5	esta i dassazene teksetaria barreta ()		04/18/03		
Taken Taken Street Lines of the	3 & 4 Methylphenol To	e i a la companya manana a sanabana	108-39-4	are contraction and a contract of the con-	e verene e e	04/18/03	0.000	300.000
again Mengara ay aw	3-Nitroaniline	38666 AF 50660 100561550 1551 50	99-09-2		86283828888 - P	04/18/03		
BLANK	4,6-Dinitro-2-methylph	enoi	534-52-1	< 670	ug/Kg	04/18/03		
								

Report w13q/rev.5.1 p 20 30-may-2003 13:21:29

SDG Number: WSCF20030461

Matrix: SOLID Test: SW-846 8270B Semi-Vols

SAF Number: F03-006

Sample Date: Receive Date:

QC Type	Analyte	CAS#	Results	Units	Analysis Date	Lower Limit	Upper Limit	
BLANK	4-Bromophenyl-phenylether	101-55-3	< 67	ug/Kg	04/18/03			See 185
BLANK	4-Chlorophenyl-phenylether	7005-72-3	< 67	ug/Kg	04/18/03	w. 11. spreament of 11.1619(11)		888800081
BLANK	Acenaphthene	83-32-9	< 67	ug/Kg	04/18/03			
BLANK	Acenaphthylene	208-96-8	< 80	ug/Kg	04/18/03		20000000000000000000000000000000000000	400 40000
BLANK	Anthracene	120-12-7	< 67	ug/Kg	04/18/03			
BLANK	bis(-2-Chloroethyl)Eth	111-44-4	< 250	ug/Kg	04/18/03		S *440 1000 000 000 000 000 000 0000 0000	
BLANK BLANK	Benzo(a) anthracene	56-55-3	< 67	ug/Kg	04/18/03			
BLANK	Benzo(b)fluoranthene	205-99-2	< 67	ug/Kg	04/18/03	.cuc.cop.;ripad&305ccom.p pp ccc	os 20-50. To object soos acceptance acceptan	100000000
BLANK	Benzo(g.h,i)perylana Benzo(a)pyrene	191-24-2 50-32-8	≺ 67	ug/Kg	04/18/03			
BLANK	bis(2:Chloroethoxy)methane	111-91-1	< 67 < 110	ug/Kg	04/18/03	68/00 000	84-850-855-855-855-8-1-1 1000 -88-4-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	(2007)005
BLANK	Bis (2-Ethylhexyl) phthalate	117-81-7	< 560	ug/Kg ug/Kg	04/18/03 04/18/03			
BLANK	Bis(2-Chlore-1-mathylene)	108-60-1	< 250	ug/Kg	04/18/03	0.000	10.000	28838 A
BLANK	Benzo (k) fluoranthene	207-08-9	< 67	ug/Kg	04/18/03	V.500	10.000	
BLANK	Butylbenzylphthalate	85-69-7	< 67	ug/Kg	04/18/03			91811 <u>1</u>
BLANK	Carbazole	86-74-8	< 80	ug/Kg	04/18/03			
BLANK	4-Chloroaniline	106-47-8	< 93	ug/Kg	04/18/03			2010000
BLANK	4-Chloro-3-methylphenol	59-50-7	< 67	ug/Kg	04/18/03	0 1101 10 101 Walester (0.000 00 00		\$200000
BLANK	2-Chlorophenol	95-57-8	< 150	ug/Kg	04/18/03			
BLANK	Chrysene	218-01-9	< 67	ug/Kg	04/18/03		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
BLANK	3,3'-Dichlorobenzidine	91-94-1	< 80	ug/Kg	04/18/03			0.000
BLANK	Dibenz(a,h)anthracene	53-70-3	< 67	ug/Kg	04/18/03		***************************************	55007500
BLANK	Dibenzofuran	132-64-9	< 67	ug/Kg	04/18/03			
BLANK	Di-n-butylphthalate	84-74-2	< 87	ug/Kg	04/18/03		nasiata ya kata da kat	
BLANK	Diethylphthalate	84-66-2	570	ug/Kg	04/18/03			
BLANK	Dimethylphthalate	131-11-3	< 67	ug/Kg	04/18/03	>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>		10.5550.5
BLANK	2,4-Dinitraphenol	51-28-5	< 670	ug/Kg	04/18/03			
BLANK	Di-n-octylphthalate	117-84-0	< 67	ug/Kg	04/18/03	000000000000000000000000000000000000000		0000000
BLANK BLANK	N-Nitroso-di-n-prepylamine 2-Fluorobiphenyl Surr	521-64-7 321-60-8	< 67	ug/Kp	04/18/03	ES 000	140.000	
BLANK	2-Fluorobiphenyl Surr Fluorene	86-73-7	85.100 < 67	%Recove ug/Kg	04/18/03 04/18/03	56.000	122.000	100000
BLANK	Fluoranthens	206-44-0	< 67	ug/Kg	04/18/03			3335- 3355-
BLANK	Hexachlorobenzene	118-74-1	< 67	ug/Kg	04/18/03			
BLANK	Hexachlorobutadiene	87-68-3	< 370	ug/Kg	04/18/03			334996°
BLANK	Hexachlorocyclopentadiene	77-47-4	< 310	ug/Kg	04/18/03			\$ \$\$
BLANK	Hexachloroethane	67-72-1	< 470	ug/Kg	04/18/03	64.44 .66 6.57*** 3 *** 1 November 1 Nov	egen i in especialistica de la constitución de la c	2011090
BLANK	Indena(1,2,3-cd)pyrene	193-39-5	< 67	ug/Kg	04/18/03			
BLANK	Isophorone	78-59-1	< 67	ug/Kg	04/18/03	~ - #00100##K #6 7410#CC ##001,000	Militar in 1 1 sat socious conserva disconsistence	160,0000
BLANK	Phénot	108-95-2	< 100	ug/Kg	04/18/03			
BLANK	Naphthalene	91-20-3	< 290	ug/Kg	04/18/03			
BLANK	Nitrobenzene-d5 Surr	4165-60-0	86.000	%Recove	04/18/03	64.000	111.000	8690 8000
BLANK	Nitrobenzene	98-95-3	< 260	ug/Kg	04/18/03	n va moon voogog goekkande kaannen na		000000
BLANK	4-Nitrophanol	100-02-7	< 650	ug/Kg	04/18/03			
BLANK	4-Nitroaniline	100-01-6	< 250	ug/Kg	04/18/03	opine ne pranouni i rote estre a dalas e co- c		387304
BLANK	N-Nitrosodiphenylamine	86-30-6	< 67	ug/Kg	04/18/03			
BLANK	Pentachlorophenol	87-86-5	< 300	ug/Kg	04/18/03			

Report w13q/rev.5.1 p 21 30-may-2003 13:21:29

SDG Number: WSCF20030461

Matrix: SOLID Test: SW-846 8270B Semi-Vols

SAF Number: F03-006

Sample Date: Receive Date:

QC						Analysis	Lower	Upper	
Type	Analyte		CAS#	Results	Units	Date	Limit	Limit	
BLANK	Phenanthrene		85-01-8	< 67	ug/Kg	04/18/03			9.86
BLANK	Phenol-d5	Surr	4165-62-2	77.300	%Recove	04/18/03	54.000	120.000	1000
BLANK	Pyrene		129-00-0	< 67	ug/Kg	04/18/03			293 200
BLANK	Tri-n-butylphospha	te	126-73-8	< 67	ug/Kg	04/18/03	av		30000
BLANK	2,4.6-Tribromophe	nol Surr	118-79-6	66,800	%Recove	04/18/03	24,000	122,000	
BLANK	Terphenyl-d14	Surr	98904-43-9	97.400	%Recove	04/18/03	35.000	150,000	SAME OF
LCS	1,2,4-Trichloroben	zena	120-82-1	88.300	% Recav	04/18/03	46.000	107,000	6899 3885
LCS	1,4-Dichtorobenzer	ne (SV)	106-46-7	78.800	% Recov	04/18/03	42,000	111.000	59900
LCS	2,4-Dinitrotalusne		121-14-2	72,000	% Recov	04/18/03	59.000	106:000	38
LCS	2-Fluorophenol	Surr	367-12-4	75.300	% Recov	04/18/03	50.000	110,000	
LCS	Acenaphthene		83-32-9	80.800	% Recov	04/18/03	61.000	116,000	
LCS	4-Chloro-3-methylp	henol	59-50-7	83.000	% Recov	04/18/03	61.000	106.000	
LĊS	2-Chlorophenol		95-57-8	72.600	% Recov	04/18/03	66.000	106.000	
LCS	N-Nitroso-di-n-prop	ylamine	621-64-7	77.200	% Recov	04/18/03	71.000	114.000	
LCS	2-Fluorobiphenyl	Surr	321-60-8	83.700	% Recov	04/18/03	58.000	109,000	
LCS	Phenol		108-95-2	73.900	% Recov	04/18/03	67.000	105,000	
LCS	Nitrobenzene-d5	Surr	4165-60-0	81.900	% Recov	04/18/03	60,000	118,000	493 363
LCS	4-Nitrophenol		100-02-7	64.400	% Recov	04/18/03	32.000	118.000	
LCS	Pentachlorophenol		87-86-5	72:500	% Recov	04/18/03	62.000	114,000	
LCS	Phenol-d5	Surr	4165-62-2	77.200	% Recov	04/18/03	59.000	116.000	*** 65
LCS	Pyrene		129-00-0	86,400	% Recov	04/18/03	66.000	118.000	2005 8605
LCS	2,4,6-Tribromophen	ool Surr	118-79-6	81.500	% Recov	04/18/03	60,000	120,000	contra
: LCS	Terphenyl-d14	Surr	98904-43-9	91.100	% Recov	04/18/03	60,000	120,000	Ø.

SDG Number: WSCF20030461

Matrix: SOLID

Test: WTPH-D TPH Diesel Range (Wa)

SAF Number: F03-006

Sample Date: 04/04/03 Receive Date: 04/04/03

QC					Analysis	Lower	Upper
Type ·	Analyte	CAS #	Results	Units	Date	Limit	Limit

Lab ID: W030000159

BATCH QC ASSOCIATED WITH SAMPLE

	MS	ortho-Terphenyl	84-15-1	100,000	% Recov	06/01/03	70,000	130.000
	MS	Total Pet, Hydrocarbons Diesel	68476-34-6	86.500	% Recov	05/01/03	75,000	125,000
3800	MSD	ortho-Terphenyl	84-15-1	97.100	% Recav	05/01/03	70.000	130,000
	MSD	Total Pet. Hydrocarbons Diesel	68476-34-6	88.000	% Recov	05/01/03	75.000	125.000
	SPK-RPD	ortho-Terphenyl	84-15-1	2.943	RPD	06/06/03	0.000	20.000
	SPK-RPD	Total Pet. Hydrocarbons Diesel	68476-34-6	1.719	RPD	05/06/03	0.000	20.000

BATCH OC

	DW I	lСП	QC									
	BLANI	κ	Kerosene		8	008-20-	6 < 4000	ug/Kg	05/01/03	0.000	100:000	
	BLANI	K	ortho-Terp	henyi	. 8	4-15-1	22743	ug/Kg	05/01/03	70,000	130.000	
3.000	BLANI	Κ	Total Pet.	Hydrocarbons Dies	si 6	8476-34	(-6 < 4000	ug/Kg	05/01/03	0.000	300.000	
	LCS		Kerosene		8	008-20-	6 85.000	%Recov	e 05/01/03	70.000	130.000	
	LCS		ortho-Terp	henyl		4-15-1	99,700	% Reco	v 05/01/03	70,000	130.000	

SDG Number: WSCF20030461

Matrix: SOLID

QC

Type

Test: NWTPH-GX TPH Gasoline Range

SAF Number: F03-006

Sample Date: 04/04/03

Lower

Limit

Analysis

Date

Units

Receive Date: 04/04/03

Upper

Limit

Analyte

Lab ID: W030000157 BATCH OC ASSOCIATED WITH SAMPLE

DUP	Total Pet. Hydrocarbons Gas	TPH-G	n/a	RPO	04/16/03	0.000	20.000
MS	Total Pet. Hydrocarbons Gas	TPH-G	97.000	% Recov	04/16/03	50.000	150.000
MSD	Total Pet. Hydrocarbons Gas	TPH-G	98.000	% Recov	04/16/03	50:000	150,000
SPK-RPC	Total Pet. Hydrocarbons Gas	TPH-G	1.026	RPD	04/16/03	0.000	20.000

Results

CAS#

Lab ID: W030000158

BATCH QC ASSOCIATED WITH SAMPLE

MS		Hydrocarbons Gas	TPH-G	87.000		04/16/03	50.000	150.000
MSD	Total Pet.	Hydrocarbons Gas	TPH-G	106,000	% Recov	04/16/03	50,000	150,000
SPK-RE		Hydrocarbons Gas	TPH-G	19 689	RPD	04/16/03	0.000	20 000

Lab ID: W030000159

BATCH QC ASSOCIATED WITH SAMPLE

MS	Total Pet. Hydrocarbons Gas	TPH-G	101.000	% Recov		50.000	150,000
MSD	Total Pet. Hydrogarbons Gas	TPH-G	103,000	% Recov	04/16/03	50.000	150,000
SPK-RPD	Total Pet. Hydrocarbons Gas	TPH-G	1.961	RPD	04/16/03	0.000	20,000

BATCH QC

BLAN	K Total Pet. Hydrocarbons Gas	TPH-G	<50	mg/L 04/16/03	0.000	300,000
LCS	Total Pet. Hydrocarbons Gas	TPH-G	89.000	% Recov 04/16/03	85.000	115.000

Ayres, Doris E

From:

Christian, Bruce [BChristian@TechLawInc.com]

Sent:

Thursday, August 05, 2004 5:59 PM

To:

Ayres, Doris E

Subject:

RE: Validation Issues

This is my permission to cross off the UJ qualifiers on the ortho-terphenyl.

----Original Message----

From: Ayres, Doris E [mailto:Doris_E_Ayres@RL.gov]

Sent: Wed 7/21/2004 3:57 PM

To: Christian, Bruce Cc: Trent, Stephen J

Subject: Validation Issues

Bruce -

Per our phone conversation of July 21, 2004, the following items need your attention:

1. Review Comment #1 and #3 from Bill Thackaberry on H2469 need to be amended. The associated pages also need to be corrected and resubmitted.

Review Comment #1, #3, #5, and #6 from Bill Thackaberry on WSCF200431684 need

to be amended. The associated pages also need to be corrected and resubmitted.

3. On the validation for some WSCF data for the 200-PW-2 validation that was done in January, I need a letter/memo giving me permission to cross off the "UJ" qualifiers that were added to the ortho-Terphenyl (CAS # 84-15-1).

Doris

× 000036 Dayres 8/16/04 Date:

17 November 2003

To:

Fluor Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

200-PW-2/200-PW-4 OU Borehole Soil Sampling

Subject: Inorganics - Data Package No. WSCF20030461 (SDG No. 30461)

INTRODUCTION

This memo presents the results of data validation on Data Package No. 30461 prepared by WSCF. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample	Media	Validation	Analysis
B16RX8	4/4/03	Soil	С	See note 1
B16RX9	4/4/03	Soil	С	See note 1

^{1 -} ICP metals by 6010A and 200.8.

Data validation was conducted in accordance with the FHI validation statement of work and the 200-PW-2 Uranium-Rich Process Waste Group Operable Unit RI/FS Work Plan and RCRA TSD Unit Sampling Plan (DOE/RL-2000-60, Rev. 1, December 2000). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 6 months for ICP metals.

All holding times were acceptable.

Preparation (Method) Blanks

Preparation Blanks

000001

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

Accuracy

Matrix Spike & Matrix Spike Duplicate

Matrix spike (MS), matrix spike duplicate (MSD) are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 75% to 125% for matrix spike analysis. Samples with a spike recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a spike recovery of 30% to 74% and a sample result less than the IDL are qualified "UJ". Samples with a spike recovery of greater than 125% or less than 74% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a spike recovery greater than 125% and a sample result less than the IDL, no qualification is required. LCS recoveries must fall within limits specified by the laboratory.

Due to MS or MSD recoveries outside QC limits, all arsenic (MS-55.97%, MSD 65.1%), molybdenum (MS-56.93%, MSD-57.6%) and selenium (MS-50%, MSD-52.3%) results were qualified as estimates and flagged "J".

Due to the lack of a MS/MSD analysis, all aluminum, barium, manganese, uranium, vanadium and zinc results were qualified as estimates and flagged "J".

All other MS/MSD results were acceptable.

Laboratory Control Sample

The LCS is used to monitor the overall performance of all steps in the analysis. Recoveries must fall within the range of 80% to 120% for LCS analysis. Samples with a recovery of less than 50% are rejected and flagged "UR". Samples with a recovery of 50% to 79% and a sample recovery below the IDL are qualified "UJ". Samples with a recovery of greater than 120% or less than 80% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 120% and a sample result less than the IDL, no qualification is required.

Due to an LCS recovery outside QC limits (147.8%), the silver result in sample B16RX8 was qualified as an estimate and flagged "J".

Due to the lack of an LCS analysis, all thorium results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (217.1%), all boron results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Precision

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike and matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than +/- 35%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

Due to the lack of a MS/MSD analysis, all aluminum, barium, manganese, uranium, vanadium and zinc results were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

Analytical Detection Limits

Reported analytical detection levels are compared against the target quantitation limits (TQLs) to ensure that laboratory detection levels meet the required criteria. All undetected results met the analyte specific TQL.

Completeness

Data package No. 30461 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to MS or MSD recoveries outside QC limits, all arsenic (MS-55.97%, MSD 65.1%), molybdenum (MS-56.93%, MSD-57.6%) and selenium (MS-50%, MSD-52.3%) results were qualified as estimates and flagged "J". Due to the lack of a MS/MSD analysis, all aluminum, barium, manganese, uranium, vanadium and zinc results were qualified as estimates and flagged "J". Due to an LCS recovery outside QC limits (147.8%), the silver result in sample B16RX8 was qualified as an estimate and flagged "J". Due to the lack of an LCS analysis, all thorium results were qualified as estimates and flagged "J". Due to an LCS recovery outside QC limits (217.1%), all boron results were qualified as estimates and flagged "J". Data flagged "J" is an estimate, but under the FHI validation SOW, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

<u>REFERENCES</u>

FHI, Contract #20266, Validation Statement of Work, Fluor Hanford Incorporated, July 7, 2003.

DOE/RL-2000-60, Rev. 1, 200-PW-2 Uranium-Rich Process Waste Group Operable Unit RI/FS Work Plan and RCRA TSD Unit Sampling Plan, December 2000.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with FHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value.

 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- N Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: 30461	REVIEWER: TLI	DATE: 11/17/03	PAGE_1_0F_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Arsenic, molybdenum, selenium	J	All	MS/MSD recovery
Aluminum, barium, manganese, uranium, vanadium, zinc	J	All	No MS/MSD analysis
Boron	J	All	LCS recovery
Silver	J	B16RX8	LCS recovery
Thorium	J	All	No LCS analysis

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: FLUOR I Laboratory: WSC				1					
Case		/SCF2003	046] 1					
	B16RX8 B16RX9								
Sample Number		BIOKAO		DIOKYA				 	
Remarks		4/4/00		4/4/03		<u> </u>		 	
Sample Date	ITQL	4/4/03 Result	Q		Q	Result	IQ.	Result	Ta
Inorganics	IUL		Ū	<6.11	U	Result	۳	Kesuit	4
Bismith	 	<6.62				 	 -	 	╁
Boron	 	34.33	_	34.10	_		\vdash	-	+
Aluminum	ļ <u>.</u>	6970	_	6520		 	┼	 	+-
Antimony	6		<u>U</u>		<u>u</u>		₩		╄
Arsenic	1	2,81		2.07			┼		
Barium	20	83.7	J.	85,8	J_		ļ		╄-
Beryllium	0,5	0.248	<u> </u>	0.256	ļ		<u> </u>	ļ	↓
Cadmium	0,5	0.200	L	0.208	<u> </u>		ļ	ļ	<u> </u>
Chromium	1	4.84		4.91	<u> </u>		<u> </u>		↓
Cobalt		9,81		10.5	<u> </u>				
Copper	2.5	12,9		13.0					
Lead	1	2.80		2.78					
Manganese	Γ	433	J	456	7		L.		
Мегсигу	0.2	<0.0486	U.	<0.0479	U.		Γ	I	
Molybdenum		1.54	Ŋ_	<1.44	υj				
Nickel	4	6.25		6.90					
Selenium	10	<1.46	IJ	<1.44	IJ		П		
Silver	0.5	0.118	J	<0.0958	U	T			Т
Thallium		0.121		0.103			1	1	T
Thorium		2.41	J	2.73	J				Т
Uranium	1	118	_	130	J				1
Vanadium		104		108					Τ
Zinc		58.8	_	57.3			T		Τ

Attention: Project:

Steve Trent F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

						WSCF						•		
Sample #	Client II)	CAS#	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
W030000159	B16AX8	GPP	13968-53-1	Ru-103 by GEA	SOLID	LA-508-462	u	6.11e-04	pCi/g		0,012	04/08/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	E,T,C	Ru-106 Rel.% Count Error (GEA)	SOLID	LA-508-462		1.00+03	%		0.0	04/08/03	04/04/03	04/04/03
W030000159	B16PX8	GPP	13967-48-1	Ru-106 by GEA	SOLID	LA-508-462	Ü	-6.81e-04	p¢i/g		0.10	04/08/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	E,T,C	Sb-125 Rel.% Count Error (GEA)	SOLID	LA-508-462	,,,-	330	%		0.0	04/08/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	14234-35-6	Sb-125 by GEA	SOLID	LA-508-462	ü	6.10e-03	pCi/g		0.633	04/08/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	E,T,C	Sn-113 Rel. % Count Error (GEA)	SOLID	LA-508-462	272*272*1+ * .	192	%	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0.0	04/08/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	13966-06-8	Sn-113 by GEA	SOLID	LA-508-462	Ú	-4.95e-03	pCi/g		0.015	04/08/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	E,T,C	Sn-126 Rel.% Count Error (GEA)	SOLID	LA-508-462	*1*1*1*1*1*1	19.2	%	egese sever i line	0.0	04/08/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	15832-50-5	Sn-126 by GEA	SOLID	LA-508-462	ü	0.578	pCl/g		0.085	04/08/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	E,T,C	Th-234 Rel.% Count Error (GEA)	SOLID	LA-508-462	2-1-12-1 1 1 -1-12-1	14,4	%	41-1-44	0.0	04/08/03	04/04/03	04/04/03
W030000159	B16RXB	GPP	15065-10-8	Th-234 by GEA	SOLID	LA-508-462		25.4	o⊄i/g		1.5	04/08/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	E.T,C	TI-208 Rel.% Count Error (GEA)	SOLID	LA-508-462	*1**************	15.8	%	turararunur Turarar	0.0	04/08/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	14913-50-9	TF208 by GEA	SOLID	LA-508-462		0.147	pCl/g		0,012	04/08/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	E,T,C	U-235 Rel.% Count Error (GEA)	SOLID	LA-508-462	*******	41.0	%		0.0	04/08/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	15117-96-1	U-235 by GEA	SOLID	LA-508-462		0.316	pCI/g		0.13	04/08/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	E,T,C	Zn-65 Rel.% Count Error (GEA)	SOLID	LA-508-462	-1 2+114141	178	%	• • • • • • • • • • • • • • • • • • • •	0.0	04/08/03	04/04/03	04/04/03
W030000159	616PX8	GPP	13982-39-3	Źn-65 by GEA	SOUD	LA-508-462	u i	9.034-03	pCi/g		0.024	04/08/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	7440-69-9	Bismuth by ICP	SOLID	LA-505-411	U	< 6.62	ug/L	1.00	6. 6	05/06/03	04/04/03	04/04/03
W030000159	B16RX8	GPP 7440-42-8	7440-50-9	Baron by ICP	SOLID	LA-505-411	E 1	34,33	ug/g	97.00	9.890	05/06/03	04/04/03	04/04/03
-W030000159	B16RX8	GPP Dune	7429-90-5	Aluminum by ICP-MS	SOUD	LA-505-412	EI	6.970 +03	ug/g	4.86	54	04/15/03	04/04/03	04/04/03
-W030000159	B15AX8	GPP \$ 16/040	7440-36-0	Antimony by ICP-MS	SOLID	LA-505-412	u j	< 0.243	ug/g	0 49	0.24	04/15/03	04/04/03	04/04/03
-W030000159	B16RX8	GPP	7440-38-2	Arsenic by ICP-MS	SOLID	LA-505-412	EJ	2.81	ug/g	4.86	1.5	04/15/03	04/04/03	04/04/03
-w030000159	B16RX8	GPP	7440-39-3	Barium by ICP-MS	SOLID	LA-505-412	1	83.7	ug/g	4.86	0.97	04/15/03	04/04/03	04/04/03
-W030000159	B16RX8	GPP	7440-41-7	Beryllium by ICP-MS	SOLID	LA-505-412	والمنتين وووود الرواوي	0.248	ug/g	0.49	0.15	04/15/03	04/04/03	04/04/03
- W030000159	8168X8	GPP	7440-43-9	Cadmium by ICP-MS	SOLID	LA-505-412		0.200	ug/g	0.49	0.049	04/15/03	04/04/03	04/04/03
- W030000159	B16RX8	GPP	7440-47-3	Chromium by ICP-MS	SOLID	LA-505-412	-1-,-2+2+2+2+2-0+2+0+	4.84	ug/g	0.49	0.15	04/15/03	04/04/03	04/04/03
-W030000159	B16RX8	GPP	7440-48-4	Cobalt by ICP-MS	SOLID	LA-505-412		9,81	ug/g	0.49	0.097	04/15/03	04/04/03	04/04/03

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J - Estimated Value

X - Other flags and notes described in the comments/narrative.

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Report W004/ver. 5,1

Ground Water Protection Program

E - Analyte is an estimate, has potentially larger errors

WSCF20030461 Attention: Steve Trent Group #: F03-006: 200-PW-2/PW-4 Project: WSCF Client ID CAS# Sample # Test Performed Analyze Sample Receive Matrix Method RO Result Unit DF MDL -- W030000159 B16RX8 7440-50-8 Copper by ICP-MS 04/15/03 04/04/03 04/04/03 SOLID LA-505-412 0.49 0.24 12.5 ug/g -W030000159 B16RX8 7439-92-1 04/15/03 04/04/03 04/04/03 GPP Lead by ICP-MS LA-505-412 SOLID 2.80 ug/g 0.49 0.58 - W030000159 B16RX8 CPP 7439-96-5 04/15/03 04/04/03 04/04/03 Manganese by ICP-MS SOLID 1.5 LA-505-412 433 ua/a 4.86 W030000159 B16RX8 7439-97-6 04/15/03 04/04/03 04/04/03 GPP Mercury by ICP-MS SOLID LA-505-412 U 0.0486 ug/g 0.49 0.049 - W030000159 B16RX8 04/15/03 04/04/03 04/04/03 GPP. 7439-98-7 Molybdenum by ICP-MS SOLID LA-505-412 1.5 1.54 4.86 - W030000159 B16RX8 GPP. 7440-02-0 Nickel by ICP-MS LA-505-412 04/15/03 04/04/03 04/04/03 SOLID 6.25 ug/g 0.49 0.24 W030000159 B16RXB GPP 7782-49-2 Selenium by ICP-MS SOLID LA-505-412 EU 1.5 04/15/03 04/04/03 04/04/03 1 46 ug/g 4.86 -W030000159 B16RX8 7440-22-4 Silver by ICP-MS SOLID 1A-505-412 0.097 04/15/03 04/04/03 04/04/03 0.118 ug/g 0.49 -W030000159 B16RX8 GPP 7440-28-0 04/15/03 04/04/03 04/04/03 Thallium by ICP-MS SOLID LA-505-412 0.49 0.049 0.121 ug/g W030000159 B16RX8 GPP 7440-29-1 04/16/03 04/04/03 04/04/03 Thorium by ICP-MS SOLID LA-505-412 0.49 0.097 2.41 ug/g -W030000159 B16RX8 GPP 7440-61-1 Uranium by ICP-MS SOLID LA-505-412 4.86 0.49 04/15/03 04/04/03 04/04/03 ug/g 118 W030000159 B16RX8 GPP 7440-62-2 Vanadium by ICP-MS 04/15/03 04/04/03 04/04/03 SOLID LA-505-412 1.9 104 ug/g 4.88 - W030000159 B16RX8 GPP 7440-66-6 Zinc by ICP-MS SOLID LA 505-412 58.8 4.86 19 04/15/03 04/04/03 04/04/03 ug/g W030000159 B16RX8 04/16/03 04/04/03 04/04/03 TPH-G Total Pet. Hydrocarbons Gas **NWTPH** SOLID 2.5e + 02250 ug/kg ₩030000159 816RXB 13981-16-3 04/17/03 04/04/03 04/04/03 Pu-238 by AEA SOLID LA-508-471 U 0.066 0.0360 pC/g 04/17/03 04/04/03 04/04/03 W030000159 B16RX8 GPP E.T.C Pu-238 by AEA Total Cntg Error SOLID LA-508-471 120 0.0 __W030000159 B16AX8 E.T.C GPP Pu-239/240 AEA Total Coto Err SOLID 0.0 04/17/03 04/04/03 04/04/03 LA-508-471 100 W030000159 B16RX8 GPP PU-239/240 Pu-239/240 by AEA 04/17/03 04/04/03 04/04/03 SOLID LA-508-471 U 0.066 8.90e-03 pCi/g W030000159 B16RX8 GPP 120-82-1 1,2,4-Trichlorobenzene SOLIO 1 00 3.1a+02 D4) (\$J03 04/04/03 04/04/03 LA-523-456 U 310 ug/kg W030000159 B16RX8 95-50-1 04/18/03 04/04/03 04/04/03 1.2-Dichlorobenzene (SV) SOLID LA-523-456 U < 380 ug/kg 1.00 3.8e + 0204/18/03 04/04/03 04/04/03 W030000159 B16RX8 541-73-1 1.3-Dichlorobenzene SOLID LA-523-456 U < 340 1.00 3.4e+02 ug/kg W030000159 B16RX8 04/18/03 04/04/03 04/04/03 GPP 106-46-7 1.4-Dichlorobenzene (SV) SOLID LA-523-456 U 1.00 3.3e + 02< 330 ug/kg W030000159 B16RX8 95-95-4 04/18/03 04/04/03 04/04/03 2,4,5-Trichlorophenol SOLID LA-523-456 U 1.00 7.10+02 710 ug/kg W030000159 B16RX8 88-06-2 2,4,6-Trichlorophenoi SOLID LA-523-456 U 04/18/03 04/04/03 04/04/03 71.0 1.00 71 ug/kg W030000159 816RX8 GPP 120-83-2 2.4-Dichlorophenol SOLID LA-523-456 U 1.00 85 04/18/03 04/04/03 04/04/03 85.0 ug/ke W030000159 B16RX8 **GPP** 105-67-9 2,4-Dimethylphenol 71 04/18/03 04/04/03 04/04/03 SOLID LA-523-456 U 71.0 1.00 ug/kg W030000159 B16RX8 GPP 51-28-5 04/18/03 04/04/03 04/04/03 2.4-Dinitrophenol SOLID LA-523-456. U ug/kg 1.00 7.1e+02

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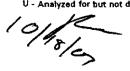
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Report W004/ver. 5.1

Ground Water Protection Program

E - Analyte is an estimate, has potentially larger errors



Attention: Project:

Steve Trent F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

FI	oject:	rus-uuo: 200-rw-2/rw-4												
Samula #	Client II	•	CAS#	Test Performed	Matric	WSCF	DΛ	Dogula	¥T	DF	MDL	Analyze	Comple	Dacaive
Sample#					Matrix	Method	RQ	Result	Unit	Dr				
W030000160		GPP	ET.C	Th-234 Ref % Count Error (GEA)	SOLID	LA-508-462		13.0	%		0.0	04/09/03		dFa42FaFaF4FaF3F4
W030000160		GPP	15065-10-8	Th-234 by GEA	SOLID	LA-508-462		35.1	pCi/g		1.2	04/09/03		Contraction tate
W030000160	B16RX9	GPP	E,T,C	TI-208 Rel, % Count Error [GEA]	SOLID	LA-508-462		17.3	%		0,0	04/09/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	14913-50-9	TI-208 by GEA	SOLID	LA-508-462		0.137	pCi/g	-	0.012	04/09/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	ET,C	U-235 Rel. % Count Error (GEA)	SOLID	LA-508-462		21.7	%		0.0	04/09/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	15117-96-1	U-235 by GEA	SOLID	LA-508-462		0.583	pCi/g		0.11	04/09/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	E.T.C	Zn-65 Rel.% Count Error (GEA)	SOLID	LA-508-462		432	%		0,0	04/09/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	13982-39-3	Zn-65 by GEA	SOLID	LA-508-462	U	-3.76e-03	pCi/g	*************	0.023	04/09/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	7440-69-9	Blemuth by ICP	SOLID	LA-505-411	u	< 6.11	ug/g	89.90	6.1	05/06/03	04/04/03	04/04/03
W030000160	B16RX9	GPP 7446-42-8	7440-50-8"	Boron by ICP	SOLID	LA-505-411	E	34.10	na/a	89.90	9.170	05/06/03	04/04/03	04/04/03
-W030000160	B16RX9	GPP TRAUM	7429-90-5	Aluminum by ICP-MS	SOLID	LA-505-412		6.526+03	ug/g	4.79	53	04/15/03	04/04/03	04/04/03
W030000160	B16RX9	GPP 8/16/040	7440-36-0	Antimony by ICP-MS	SOLID	LA-505-412	U	< 0.240	ug/g	0.48	0.24	04/15/03	04/04/03	04/04/03
- W030000160	B16RX9	GPP	7440-38-2	Arsenic by ICP-MS	SOLID	LA-505-412		T 2.07	ug/g	4.79	114	04/15/03	04/04/03	04/04/03
-W030000160	B16RX9	GPP	7440-39-3	Barium by ICP-MS	SOLID	LA-505-412	441144114444	7 85.8	ug/g	4.79	0.96	04/15/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	7440-41-7	Beryllium by ICP-MS	SOLID	LA-505-412		0.256	vg/g	0.48	0.14	04/15/03	04/04/03	04/04/03
₩030000160	B16RX9	GPP	7440-43-9	Cadmium by ICP-MS	SOLID	LA-505-412	19091909090909090	0.208	ug/g	0.48	0.048	04/15/03	04/04/03	04/04/03
-W030000160	B16RX9	GPP	7440-47-3	Chromium by ICP-MS	SOLID	LA-505-412		4.91	ug/g	0.48	0.14	04/15/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	7440-48-4	Cobalt by ICP-MS	SOLID	LA-505-412	1:7:1:4:1:1:1:1:1:1:	10.5	ug/g	0.48	0.096	04/15/03	04/04/03	04/04/03
M030000160	B16RX9	GPP	7440-50-8	Copper by ICP-MS	SOLID	LA-505-412		13.0	ug/g	0.48	0.24	04/15/03	04/04/03	04/04/03
W030000160	B16RX9	- GPP	7439-92-1	Lead by ICP-MS	SOLID	LA-505-412	. ::R:R:R:R:R:R:R.P:R.	2.78	ug/g	0.48	0.58	04/15/03	04/04/03	04/04/03
W030000160	B16AX9	GPP	7439-96-5	Manganese by ICP-MS	SOLID	LA-505-412		456	ug/g	4.79	1.4	04/15/03	04/04/03	04/04/03
~W030000160	B16RX9	GPP	7439-97-6	Mercury by ICP-MS	SOLID	LA-505-412	U	< 0.0479	ug/g	0.48	0.048	04/15/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	7439-98-7	Molybdenum by ICP-MS	SOLID	LA-505-412	EU T	< 1.44	ug/g	4.79	114	04/15/03	04/04/03	04/04/03
W030000160	B16RX9	endede de	7440-02-0	northering in the comment of the co	SOLID	LA-505-412		6.90	ug/g	0.48	::::::::::::::::::::::::::::::::::::::	04/15/03	04/04/03	04/04/03
-W030000160	ويعارفا والمراجي فارموه وماره ومحادث	GPP	7782-49-2	Selenium by ICP-MS	SOLID	LA-505-412	EU -	< 1.44	ug/g	4.79	والأراز ووالمعترف والمتحدد والمراوي والمتعار	and the second	الرابيات ومعموض مومي	04/04/03
₩030000160		GPP	7440-22-4	#FFDBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBB	SOLID	LA-505-412	ander 🗀	< 0.0958	ug/g	0.48		가면 요한 하다.		04/04/03
-W030000160		GPP	7440-28-0	Thallium by ICP-MS	SOLID	LA-505-412		0.103	ug/g	0.48	native existing statistics	and the state of t	tutario establica	04/04/03
			a halifat i bada H					សម្មេច មេជាមិនមែន						

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Report W004/ver, 5.1

Ground Water Protection Program

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Attention:

Steve Trent

F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

PI	oject:	FU3-000: 200-FW	-L/F YY -4		WSCF			•				
Sample #	Client ID	CAS#	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL		ample Receive
-W030000160	B16RX9 GPP	7440-29-1	Thonum by ICP-MS	SOLID	LA-505-412		2,73	ug/g	0,48	0.096	04/15/03 0	4/04/03 04/04/03
-wo30000160	B16RX9 GPP	7440-61-1	Uranium by ICP-MS	SOLID	LA-505-412		130	ug/g	4.79	0.48	04/15/03 0	4/04/03 04/04/03
M030000160	B16RX9 GPP	7440-62-2	Vanadium by ICP-MS	SOLID	LA-505-412		108	ug/g	4.79	1.9	04/15/03 0	4/04/03 04/04/03
W030000160	B16RX9 GPP	7440-66-6	Zinc by ICP-MS	SOLID	LA-505-412	7	57.3	ug/g	4.79	19	04/15/03 0	4/04/03 04/04/03
W030000160	B16RX9 GPP	TPA-6	Total Pet. Hydrocarbons Gas	SOLID	NWTPH	υ Ī	< 250	ug/kg		2.5e+02	04/16/03 0	4/04/03 04/04/03
W030000160	B16RX9 GPP	13981-16-3	Pu-238 by AEA	SOLID	LA-508-471	U	0.0200	pCi/g		0.27	04/17/03 0	4/04/03 04/04/03
W030000160	B16RX9 GPP	出版的特別的 自然C 自己的	Pu-238 by AEA Total Critic Error	SOLID	LA-508-471		760	%		0.0	04/17/03 0	4/04/03 04/04/03
W030000160	B16RX9 GPP	E,T,C	Pu-239/240 AEA Total Cntg Err	SOLID	LA-508-471	, .*.*.	120	%	******	0.0	04/17/03 0	4/04/03 04/04/03
W030000160	B16RX9 GPP	PU-239/240	Pu-239/240 by AEA	SOLID	LA-508-471		0.0300	pCI/g		0,027		4/04/03 04/04/03
W030000160	B16RX9 GPP	120-82-1	1,2,4-Trichlorobenzene	SOLID	LA-523-456	U	< 310	ug/kg	1.00	3.1e+02		4/04/03 04/04/03
W030000160	B16RX9 GPP	95-50-1	1,2-Dichlorobenzene (\$V)	SOLID	LA-523-456	U	< 370	ug/kg	1,00	3.76+02	મુશ્લેમાં મુશ્લેમાં છે. જે માટે કરો છે.	4/04/03 04/04/03
W030000160	B16RX9 GPP	541-73-1	1,3-Dichlorobenzene	SOLID	LA-523-456	U	< 330	ug/kg	1.00	3.3e+02		4/04/03 04/04/03
W030000150	816RX9 GPP	106-46-7	1.4-Dichlorobenzene (SV)	SOLID	LA-523-456	U	< 3300	ug/kg	1,00	3,3e+02		4/04/03 04/04/03
W030000160	B16RX9 GPP	95-95-4	2,4,5-Trichlorophenol	SOLID	LA-523-456	U	< 76.0	ug/kg	1.00	76		4/04/03 04/04/03
_W030000160	B16RX9 GPP	88-06-2	2,4,6-Trichlorophenol	SOLID	LA-523-456	Ü	< 69.0	ug/kg	1.00	69		4/04/03 04/04/03
	B16RX9 GPP	120-83-2	2,4-Dichlorophenol	SOLID	LA-523-456	U	< 83.0	ug/kg	1.00	83		04/04/03 04/04/03
	B16RX9 GPP	105-67-9	2.4-Dimethylphenol	SOLID	LA-523-456	ü	< 69.0	ug/kg	1,00	69)4/04/03 04/04/03
W030000160	B16RX9 GPP	51-28-5	2,4-Dinitrophenol	SOLID	LA-523-456	U	< 230	ug/kg	1.00	2.3e+02		04/04/03 04/04/03
ZW030000160	B16RX9 GPP	121-14-2	2,4-Dinitrotoluene	SOLID	£A-523-456	ឋ	< 69.0	ug/kg	1.00	69		04/04/03 04/04/03
2 W030000160	B16RX9 GPP	606-20-2	2,6-Dinitrotoluene	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69		04/04/03 04/04/03
W030000160	B16RX9 GPP	111-76-2	2-Butoxyethanol	SOLID	LA-523-456	U	< 100	ug/kg	1.00	1.0e+02		04/04/03 04/04/03
W030000160	B16RX9 GPP	91-58-7	2-Chloronaphthalene	SOLID	LA-523-456	U	< 83.0	ug/kg	1.00	83		04/04/03 04/04/03
W030000160	B16RX9 GPP	95-57-8	2 Chlorophenol	SOLID	LA-523-456	บ	< 150	ug/kg	1.00	1.56+02		04/04/03 04/04/03
W030000160	B16RX9 GPP	91-57-6	2-Methylnaphthalene	SOLID	LA-523-456	U	< 190	ug/kg	1.00	1.9a+02		04/04/03 04/04/03
W030000160	B16RX9 GPP	95-48-7	2-Methylphenol	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69		04/04/03 04/04/03
W030000160	B16RX9 GPP	88-74-4	2-Nitroaniline	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69		04/04/03 04/04/03
M030000160	B16RX9 GPP	88-76-5	2-Nitrophenol	SOLID	LA-523-456	U	< 180	ug/kg	1.00	1.86+02	04/22/03	04/04/03 04/04/03

MDL=Minimum Detection Limit

B - The analyte < the RDL but > = the IDL/MDL (inorganic)

RQ=Result Qualifier

J - Estimated Value

X - Other flags and notes described in the comments/narrative.

DF=Dilution Factor

* - Indicates results that have NOT been validated;

+ - Indicates more than six qualifier symbols

Report W004/ver. 5.1

Ground Water Protection Program

E - Analyte is an estimate, has potentially larger errors

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

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Sample Delivery Group	WSCF20030461
Sample Matrix	Soil
Sample Visual	Brown
SAF Number	F03-006
Data Deliverable	Summary Report

Introduction

Two (2) soil samples (B16RX8, B16RX9) from the GPP was received at the WSCF Laboratory on April 4, 2003. The sample was analyzed for those analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Groundwater Protection Program-Letter of Instruction*, referenced in the cover letter.

The narrative (Attachment 1) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 2) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information. Copies of the chain of custody and Request for Sample Analysis forms are included as Attachment 3.

Analytical Methodology for Requested Analyses

- ICP-MS Metals by EPA Method 200.8 and ICP-AES Metals by EPA SW-846 Method 6010A. Analytical work was performed with no deviations to the approved method.
- VOA's by EPA SW-846 Method 8260A. Analytical work was performed with no deviations to the approved method. The compound 1-Butanol requested under EPA SW-846 Method 8015 was reported under this method.
- Semi-VOA's by EPA SW-846 Method 8270B. Analytical work was performed with no deviations to the approved method.
- Alcohols and Glycols by EPA SW-846 Method 8015. Analytical work was performed
 with no deviations to the approved method. The compound 1-Butanol requested under
 this method was reported under EPA SW-846 Method 8260A.
- WTPH-D by WDOE Method NWTPH-Dx. Analytical work was performed with no deviations to the approved method.
- WTPH-G by WDOE Method NWTPH-Gx. Analytical work was performed with no deviations to the approved method.

- IC Anions and Ammonium by EPA SW-846 Method 300.0 and 300.7. Analytical work
 was performed with no deviations to the approved method for Ammonium, but a
 deviation was required for the Anions (see comments below).
- The pH by EPA Method 150.1. Analytical work was performed with no deviations to the approved method.
- Percent Solids by EPA Method 160.3. Analytical work was performed with no deviations to the approved method.
- Cyanide by EPA SW-846 Method 9010. Analytical work was performed with no deviations to the approved method.
- All RadChem analyses (TA/TB, AEA's, GEA) were run by internal WDOE accredited WSCF procedures. Analytical work was performed with no deviations to the approved method.

Comments

PCB's – This analysis was originally on the Sample Chain of Custody when received at the WSCF Laboratory, but the client later requested the analysis not be run.

ICP-MS and ICP-AES Metals – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-27, 2-28, 2-29, 2-30, and 2-48 for QC details.

VOA's – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-36, 2-37 and 2-38 for QC details. Compounds listed on the tentatively identified peak report with an "N" qualifier have been identified with the program used to interpret the raw data.

Semi-VOA's – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-44, 2-45, 2-46 and 2-47 for QC details. Compounds listed on the tentatively identified peak report with an "N" qualifier have been identified with the program used to interpret the raw data.

Alcohols and Glycols – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-37 for QC details.

WTPH-D – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-40 for details.

WTPH-G – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-39 for details.

IC Anions – The client requested hold time(s) for this analysis was not met. The client was notified and requested WSCF to continue with this analysis. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-33, 2-34 and 2-36 for QC details.

NH4 – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-38 for QC details.

The pH – Per the direction of the chain of custody, the pH was completed within 24 hours of sampling.

Percent Solids – PCB's, VOA's, Semi-VOA's, Alcohols and Glycols, WTPH-G and WTPH-D analytical results were corrected for percent solids. All other analytical results were reported for the sample as received.

CN – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-26 for QC details.

RadChem – There are no hold times associated with these WDOE accredited methods. Except for GEA, a Laboratory Control Sample and Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-31, 2-32, and 2-35 for QC details.

This Summary Report is in compliance with the SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the WSCF Laboratory Apalytical Manager and Client Services, as verified by the following signature.

Troy Dale

WSCF Production Control

Abbreviations

Hg - mercury

IC - ion chromatography

ICP - inductively coupled plasma

ICP/AES - ICP/atomic emission spectroscopy

ICP/MS - ICP/mass spectrometry

Total U - total uranium

AT/TB - total alpha/total beta

AEA - Alpha Energy Analysis

WTPH-G - Total Hydrocarbons-Gasoline

Am - americium

Cm - curium

Pu – plutonium

Np - neptunium

GEA - gamma energy analysis

H3 – Tritium

Sr - Strontium 89, 90

WTPH-D - Total Hydrocarbons-Diesel

TSS – Total Suspended Solids

FH-Central Platea	u Project	CI	HAIN OF CUST	ODY/S	AMPL	E ANALY	SIS	REQUI	EST	F	03-006-014	Page 1	ol T
Collector Johansen/Pope/Pfister			Company Contact Telephone N 1.C Hulstrom 373-3928					Project Coordinator TRENT, SJ		Price Code	: 8N	Data Tur	-
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling			Sampling Location 216-A-19 (C3245) 22.5-25.0 ft					SAF No. F03-006		Air Quality		Days	
lee Chest No. SML - 69						COA Method of Shipment C7504ES10 Government Vehicle							
Shipped To Waste Sampling & Characteri	ization	Offsite	e Property No.	NIK	7			Bill of La	ling/Air Bil	INO. MA	-		
POSSIBLE SAMPLE HAZAI	RDS/REMARKS			1	1						<u>"</u>]	
			Preservation	Cool 4C	Cool 4C	None	None	'	.]	
		· · · · ·	Type of Container	∍G	Gs*	P	Snap V	/ial					
Special Handling and/or St	югаge	· .	No. of Container(s)	1	3	1	1	_	_			 	
		.1	Volume	250mL	40mL	500mL	60m)	-		<u> </u>	_		
00	CARABI E ANALVE		<u></u>	See kem (1) is Special Instructions.	Special	Special	Activity :	Scan				1	
00020	SAMPLE ANALYS	15										- !	
Sample No.	Matrix *	Sample Date	Sample Time										
B16RX8 W 536 20159	SOIL	4-4-03		×	×	×	×	الأفاف الشاء أو المساهد			基本 学术为 的		مقیده دفعت شیخات بیان
B16RX9 W 33000000	SOIL	4-4-0		×	<u>×</u>	×	×						
				<u> </u>	<u> </u>								<u> </u>
-				 	 	<u> </u>	<u> </u>			 			
CHAIN OF POSSESSION		Sign/Print	t Names		SPF	ECIAL INSTR	iiCiC	NG.	<u>L</u>				Matrix *
Relinguished By Removed By M		Receiped By/Store	ed in A	uc/Time 4 63 14:	40 m	The laboratory is	to report	both kerosen		•		•	S-Suil SE-Suitment
Relinquished By/Removed From	Date/Time	Received By/Ston		ate/Time	TP1 (2)	TPH-Diesel Range - WTPH-D, TPH-Gasoline Range - WTPH-G, PCBs - 3082 (2) Alcohols Glycols & Kerones - 8015 (1-Butanol Diethyl ether Ethylene glycol Methapol) W - V					SO-Solid SI-Shalp: W - Wascr		
Relinquished By/Removed From	Date/Time	Received By/Ston	ed In Di	ate/Time	Gan	(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on {Antimony-125, Cesium-134, Tin-126]; Isotopic Radium (Radium-226, Radium-228]; Isotopic Plutonium; Americium-241; Isotopic Uranium; Trace Elements ICP/MS - 200.8					O=Oti A=Air DS=Drum Solids DL=Drum Liquid		
Relinquished By/Removed From Date/Time Received By/Stored In Date/Time			ate/Time	(Co Nic	(Complete) (Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Uranium); ICP Metals - 6010A (Add-on) (Bismuth, Boron); IC Anions - 300.0								
Relinquished By/Removed From Date/Time Receiv			eived By/Stored In Date/Time			Chiorioe, Piuorioe, Nitrogen in Nitrate, Nitrogen in Nitrate, Phosphate, Sulfate); Cyanioe (10tal)						V=Vegetation X=Other	
Relinquished By/Removed From	Date/Time	Received By/Ston	ed In Dr	ate/Time		•		٠.					·
LABORATORY Received By SECTION				Т	litle							Date/Time	
FINAL SAMPLE Disposal Met	ihod					Dispos	sed By				-	Date/Time	

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

LEVEL:	A	В	(c)	D	E				
PROJECT: 20	10-PW-2/20	10-PW-Y	DATA PACKAGE: WSCF20030461						
VALIDATOR: TU LAB: W50			F	103					
CASE:			SDG:	30461					
		ANALYSES	PERFORMED						
SW-846/ICD	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide	206,8					
	8 BI				Soil Yes No N/A				
Initial calibrations Initial calibrations ICP interference color and CCV che	acceptable?hecks acceptable?	struments?			Yes No N/A Yes No N/A Yes No N/A				
ICV and CCV che Standards traceable Standards expired Calculation check	cks acceptable? ie? acceptable?				Yes No N/A Yes No N/A Yes No N/A Yes No N/A N/A				
Comments:									

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

Laboratory blanks analyzed? Laboratory blank results acceptable? Field blanks analyzed? (Levels C, D, E) Field blank results acceptable? (Levels C, D, E) Yes Transcription/calculation errors? (Levels D, E)	
ICB and CCB results acceptable? (Levels D, E) Laboratory blanks analyzed? Laboratory blank results acceptable? Field blanks analyzed? (Levels C, D, E) Field blank results acceptable? (Levels C, D, E) Transcription/calculation errors? (Levels D, E) Yes Yes	
Laboratory blanks analyzed? Laboratory blank results acceptable? Field blanks analyzed? (Levels C, D, E) Field blank results acceptable? (Levels C, D, E) Yes Transcription/calculation errors? (Levels D, E) Yes	No NA
Laboratory blank results acceptable? Field blanks analyzed? (Levels C, D, E) Field blank results acceptable? (Levels C, D, E) Transcription/calculation errors? (Levels D, E) Yes Yes	
Field blanks analyzed? (Levels C, D, E) Yes Field blank results acceptable? (Levels C, D, E) Yes Transcription/calculation errors? (Levels D, E) Yes	
Field blank results acceptable? (Levels C, D, E) Yes Transcription/calculation errors? (Levels D, E) Yes	
Transcription/calculation errors? (Levels D, E)Yes 1	
4. ACCURACY (Levels C, D, and E) MS/MSD samples analyzed?	No N/A
MS/MSD results acceptable? Yes	
MS/MSD standards NIST traceable? (Levels D, E) Yes	
MS/MSD standards expired? (Levels D, E)	\
LCS/BSS samples analyzed?	
LCS/BSS results acceptable? Yes	\sim
Standards traceable? (Levels D, E) Yes	ヘノノハ
Standards expired? (Levels D, E) Yes	\sim
Transcription/calculation errors? (Levels D, E)Yes 1	
Performance audit sample(s) analyzed?	$\overline{}$
	No (NA)
Comments: arsenic, molybdenon + setenim ~ low 115/1150 - Jal	
Silver LCS 14770- J RX8	
thorum Ly - No Les J	
Boren LCs - 21790 Jall	
	··
No PA	

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)					
Duplicate RPD values acceptable?	Yes)vo	N/A		
Duplicate results acceptable?					
MS/MSD standards NIST traceable? (Levels D, E)			/ \		
MS/MSD standards expired? (Levels D, E)			~~~		
Field duplicate RPD values acceptable?	Yes	•	NIA.		
Field split RPD values acceptable?		No			
Transcription/calculation errors? (Levels D, E)	Yes	No (N/A		
Comments:			 ,		
6. ICP QUALITY CONTROL (Levels D and E)	•				
ICP serial dilution samples analyzed?					
ICP serial dilution %D values acceptable?					
ICP post digestion spike required?	Yes	No	N/A		
ICP post digestion spike values acceptable?					
Standards traceable?			1 1		
Standards expired?			1 1		
Transcription/celculation errors?		No	(N/A		
Comments:		·	$\underline{\mathcal{L}}$		
	•				
	··· 				
					

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)			\cap
Duplicate injections performed as required?	Yes	No	N/A
Duplicate injection %RSD values acceptable?			
Analytical spikes performed as required?			
Analytical spike recoveries acceptable?	Yes	No	NA
Standards traceable?			
Standards expired?			
MSA performed as required?			
MSA results acceptable?			
Transcription/calculation errors?			
Comments:			$\underline{\vee}$
8. HOLDING TIMES (all levels)			
Samples properly preserved?	······································	No	N/A
Sample holding times acceptable?	Yes	No	N/A
Comments:	$\overline{}$		
	·		
			
	:		

BHI-01435 Rev. 0

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)		
Results reported for all requested analyses?	Yes No	N/A
Rresults supported in the raw data? (Levels D, E)	Yes No	NA
Samples properly prepared? (Levels D, E)	Yes No	WA
Results reported for all requested analyses? Rresults supported in the raw data? (Levels D, E) Samples properly prepared? (Levels D, E) Detection limits meet RDL?	Yes No	N/A
Transcription/calculation errors? (Levels D, E)	Yes No	NA
Comments:		<u> </u>
		·
		

Appendix 6

Additional Documentation Requested by Client

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20030461 Matrix: SOLID

Test: ICP-2008 MS All possible metal

SAF Number: F03-006

Sample Date: 04/04/03 Receive Date: 04/04/03

QC					Analysis	Lower	Upper
Туре	Analyte	CAS#	Results	Units	Date	Limit	Limit
Lab ID							
THE CONTRACTOR CONTRACTOR CONTRACTOR		ED WITH SAMPLE					
MS	Silver by ICP-MS	7440-22-4	93,284	% Recov	04/15/03	70.000	130.000
MS	Aluminum by ICP-MS	7429-90-5	n/a	% Recov	04/15/03	70.000	130.000
MS	Arsenio by ICP-MS	. 7440-38-2	55.970	% Recov	04/16/03	70.000	130,000 -
MS MS	Barium by ICP-MS	7440-39-3	r/a ************************************	CONTRACTOR	04/15/03	70,000	130,000
MS	Beryllium by ICP-MS Cadmium by ICP-MS	7440-41-7 7440-43-9	76.226	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	04/15/03	70.000	130.000
MS	Cobalt by ICP-MS	7440-48-4	92.217 86,667		04/15/03 04/15/03	70.000	130,000
MS	Chromium by ICP-MS	7440-47-3	91.898		04/15/03	70.000 70.000	130,000 130,000
MS	Copper by (CP-MS	7440-50-8	83.582	er i Anna Matthewaren erranan errana	04/16/03	70.000	130.000
MS	Mercury by ICP-MS	7439-97-6	113.006	24/2006/00000000000000000000000000000000	04/15/03	70.000	130,000
MS	Manganese by ICP-MS	7439-96-6	D/a	and a comment of the	D4/15/03	70.000	130.000
MS	Molybdenum by ICP-MS	7439-98-7	56.930	% Recov	04/15/03	70.000	130.000 •
MS	Nickel by ICP-MS	7440-02-0	86,867	% Recov	04/15/03	70.000	130.000
MS	Lead by ICP-MS	7439-92-1	107.676	% Recov	04/15/03	70.000	130.000
MS	Antimony by ICP-MS	7440-36-0	97.228	% Recov	04/15/03	70.000	130,000
MS	Selenium by ICP-MS	7782-49-2	50.000	% Recov		70.000	130.000 •
MS	Thorium by ICP-MS	7440-29-1	118,337	% Recov		70,000	130,000
MS MS	Thallium by ICP-MS Uranium by ICP-MS	7440-28-0 7440-81-1	101.706	% Recov	and the common boundaries and such	70.000	130.000
MS	Vanadium by ICP-MS	7440-62-2	n/a n/a	% Recov		70.000 70.000	130,000
MS	Zine by ICP-MS	7440-66-6	rva	% Recov	ACTOR CONTRACTOR OF THE PARTY O	70.000 70.000	130,000 130,000
MSD	Silver by ICP-MS	7440-22-4	92,055	% Recov		70.000	130.000
MSD.	Aluminum by ICP-MS	7429-90-6	n/a	% Recov	n anna ann an an ann an ann an ann an an	70.000	130,000
MSD	Arsenic by ICP-MS	7440-38-2	65.148	% Recov	100000000000000000000000000000000000000	70.000	130,000 •
MISD.	Barlum by ICP-MS	7440-39-3	n/a	% Recov	04/15/03	70.000	130,000
MSD	Beryllium by ICP-MS	7440-41-7	78.814	% Recov	04/15/03	70.000	130,000
MSD	Cadmium by ICP-MS	7440-43-9	91,419	% Recov	04/15/03	70.000	130.000
MSD	Cobalt by ICP-MS	7440-48-4	87.606	% Recov	ALLE STEEL STATE OF THE STATE O	70.000	130.000
MSD	Chromium by ICP-MS	7440-47-3	90,572	% Recay		70.000	130,000
MSD MSD	Copper by ICP-MS Mercury by ICP-MS	7440-50-8	84.640	% Recov	and the second s	70.000	130.000
MSD	Manganese by ICP-MS	7439-97-6 7439-96-5	114,407 n/a	% Recov % Recov		76.000 70.000	130,000 130,000
MSD	Malybdenum by ICP-MS	7439-98-7	57,627	% Recov	COLUMN TO THE PROPERTY OF THE	70.000	130.000 *
MSD	Nickel by ICP-MS	7440-02-0	90,254	% Recov	8860 1990 1994 1994	70.000	130.000
MSD	Lead by ICP-MS	7439-92-1	103,814	% Recov	unaaaanaan saannaan markiisi	70,000	130,000
MSD	Antimony by ICP-MS	7440-36-0	92,479	% Recov	ulitinadddg pacae caellar Mecaeldae	70.000	130.000
MSD	Selenium by ICP-MS	7782-49-2	82,331	% Recov	04/15/03	70.000	130,000 *
MSD	Thorium by ICP-MS	7440-29-1	118.644	% Recav	04/15/03	70.000	130.000
MSD	Thallium by ICP-MS	7440-28-0	101.907	% Recov	04/15/03	70.000	130,000
MSD	Uranium by ICP-MS	7440-61-1	n/a	% Recov		70.000	130,000
MSD	Vanadium by ICP-MS	7440-62-2	n/a	% Recav	\$10-1-coccine in coests accourses	70.000	130.000
MSD	Zinc by ICP-MS	7440-66-6	n/a	% Recov	04/15/03	70.000	130.000

BATCH QC

Report w13q/rev.5.1 p 4 30-may-2003 13:21:29

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20030461 Matrix: SOLID Test: ICP-2008 MS All possible metal

SAF Number: F03-006 Sample Date: Receive Date:

QC					Analysis	Lower	T.
Type	Analyte	CAS#	Results	Units	Date	Limit	Upper Limit
BLANK	Silver by ICP-MS	7440-22-4	< 0.200	ng/L	04/16/03	-0.440	0.440
BLANK	Aluminum by ICP-MS	7429-90-5	<11.0	ug/L	04/15/03	-24.200	24.200
BLANK	Arsenic by ICP-MS	7440-38-2	<0,300	ug/L	04/15/03	-0.680	0.660
BLANK	Barlum by ICP-MS	7440-39-3	<0.200	ug/L	04/15/03	-0.440	0.440
BLANK	Beryllium by ICP-MS	7440-41-7	<0.300	ug/L	04/15/03	-0.560	0.660
BLANK	Cadmium by ICP-MS	7440-43-9	<0.100	ug/L	04/15/03	-0.220	0,220
BLANK	Cobalt by ICP-MS	7440-48-4	<.0.200	ug/L	04/15/03	-0.440	0.440
BLANK	Chromium by ICP-MS	7440-47-3	<0.300	ug/L	04/15/03	-0.660	0.660
BLANK	Capper by ICP-MS	7440-60-8	0.766	ug/L	04/15/03	-1.100	1.100
BLANK	Mercury by ICP-MS	7439-97-6	< 0.100	ug/L	04/15/03	-0.220	0.220
BLANK	Manganese by ICP-MS	7439-96-5	< 0.300	ug/L	04/15/03	-0.660	0.660
BLANK	Molybdenum by ICP-MS	7439-98-7	< 0.300	ug/L	04/15/03	-0.660	0.660
BLANK	Nicket by ICF-MS	7440-02-0	< 0.500	ug/L	04/15/03	-1.100	1.100
BLANK	Lead by ICP-MS	7439-92-1	<1.20	ug/L	04/15/03	-2.640	2.840
BLANK	Antimony by ICP-MS	7440-36-0	1.79	ug/L	04/15/03	-1,100	1.100 +
BLANK	Selenium by ICP-MS	7782-49-2	<0.300	ug/L	04/15/03	-0.660	0.660
BLANK	Thadam by ICP-MS	7440-29-1	<0.200	ug/L	04/16/03	-0.440	0,440
BLANK	Thallium by ICP-MS	7440-28-0	<0.100	ug/L	04/15/03	-0.220	0.220
BLANK	Uranium by ICP-MS	7440-61-1	<0.100	ug/L	04/15/03	-0.220	0.220
BLANK	Vanadium by ICP-MS	7440-62-2	<0.400	ug/L	04/15/03	-0.880	0.880
BLANK	Zino by ICP-MS	7440-66 -6	<4.90	ug/L	04/15/03	-8.800	8.800
LCS	Silver by ICP-MS	7440-22-4	147.899	% Recov	04/15/03	85,000	115.000 •
rcs	Aluminum by ICP-MS	7429-90-5	112.057	% Recov	04/15/03	85,000	115.000
LCS	Arsenic by ICP-MS	7440-38-2	107,692	% Recov	04/15/03	85,000	115,000
LCS	Barlum by ICP-MS	7440-39-3	104.847	% Recov	04/15/03	85,000	115.000
LCS	Beryllium by ICP-MS	7440-41-7	106.242	% Recov	04/15/03	85.000	115.000
LCS	Cadmium by ICP-MS	7440-43-9	105.394	% Recov	04/15/03	85.000	115.000
LCS	Cobalt by ICP-MS	7440-48-4	99.075	% Recov	04/15/03	85.000	115.000
LCS	Chromium by ICP-MS	7440-47-3	106,012	% Recov	04/15/03	85.000	115,000
LCS	Copper by ICP-MS	7440-50-8	104.724	% Recov	04/15/03	85.000	115.000
LCS	Mercury by ICP-MS	7439-97-6	100.744	% Recov	04/15/03	85.000	115.000
LCS	Manganese by ICP-MS	7439-96-5	102.796	% Recov	04/15/03	85.000	115.000
LCS	Motybdenum by ICP-MS	7439-98-7	102,303	% Recov	04/15/03	95,000	115,000
LCS	Nickel by ICP-MS	7440-02-0	99.522	% Recov	04/15/03	85.000	115,000
LCS	Eead by ICP-MS	7439-92-1	114,286	% Recov	04/15/03	85.000	115,000
LCS	Antimony by ICP-MS	7440-36-0	113.769	% Recov	04/15/03	85.000	115.000
LCS	Selenium by ICP-MS	7782-49-2	108,772	% Recov	04/15/03	85,600	115,000
LCS	Therium by ICP-MS	7440-29-1	n/a	% Recov	04/15/03	85.000	115.000
LCS	Thallium by ICP-MS	7440-28-0	110.442	% Recov	04/15/03	95,000	115.000
LCS	Uranium by ICP-MS	7440-61-1	101.523	% Recov	04/15/03	85.000	115.000
LOS	Vanadium by ICP-MS	7440-82-2	103,659	% Recov	04/15/03	85,000	115,000
LCS	Zinc by ICP-MS	7440-66-6	114.717	% Recov	04/15/03	85.000	116.000

WSCF ANALYTICAL LABORATORY OC REPORT

SDG Number: WSCF20030461

Matrix: SOLID

Test: ICP Metals Analysis, Grd H20 P

SAF Number: F03-006 Sample Date:

Receive Date:

04/04/03 04/04/03

QC Type

Analyte

CAS#

Results

Units

Analysis Date

Lower Limit Upper Limit

Lab ID:

W030000157

BATCH OC ASSOCIATED WITH SAMPLE

MS Biemuth by ICP MSD Blamuth by ICP

7440-69-9

94,800 94.540 % Recov 05/08/03 % Recov 05/06/03

75,000 75,000 126,000 125.000

Lab ID:

W030000158

BATCH QC ASSOCIATED WITH SAMPLE

Blamuth by ICP MSD Blamuth by ICP 7440-69-9 94.780 7440-69-B 95.040 % Recov 05/06/03 % Recov 05/06/03 75,000 76.000 125.000 125,000

Lab ID: W030000159

BATCH QC ASSOCIATED WITH SAMPLE

Blemuth by ICP MS MSD Bismuth by ICP SPK-RPD Blamuth by ICP

7440-69-9 7440-69-9 7440-69-9

94.260 93.540 % Recov 0.767

% Recov : 05/06/03 05/06/03 05/08/03 75,000 75.000 0000

125.000 125,000

20,000

BATCH OC

BLANK LCS

Bismuth by ICP 7440-69-9 Bismuth by ICP 7440-69-9 <6.8e-2 115.200 uo/L 05/06/03 % Recov 05/06/03 -1 000 80.000

0.068 120,000

Lab ID:

W030000157

BATCH OC ASSOCIATED WITH SAMPLE

Boran by ICP MSD Boron by ICP

7440-50-8

102.780 101,300

% Recov 05/06/03 % Recov 05/06/03

70.000 75.000

130,000 125,000

Lab ID:

W030000158

BATCH OC ASSOCIATED WITH SAMPLE

MSD Baron by ICP 7440-50-8 7440-50-8

7440-50-8

7440-6D-8

101,160 100,840 % Recov 05/06/03 % Recov 05/06/03

% Recov 05/06/03

70,000 75,000

70.000

75,000

0.000

130,000 125,000

130.000

125.000

20.000

Lab ID: W030000159

Boron by ICP

BATCH OC ASSOCIATED WITH SAMPLE

MS MSD Boron by ICP SPK-RPD Boron by ICP

LCS Boron by ICP

BATCH OC

BLANK

Beron by ICP 7440-50-B 7440-50-8 7440-50-8

-0.135

< 9.5

217.163

100,820

100,040

05/06/03

ug/L

% Recov

05/06/03

05/06/03

05/06/03

-10.000

10.000 84.200

Report w13q/rev.5.1 p 23 30-may-2003 13:21:29

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20030461

Matrix: SOLID

Test: ICP Metals Analysis, Grd H20 P

SAF Number: F03-006
Sample Date: 04/04/03
Receive Date: 04/04/03

1036.10		O I		Receive Date: 04/04/03							
QC Type	Analyte	CAS#	Results	Units	Analysis Date	Lower Limit	Upper Limit				
Lab ID						i.					
BATCE MS MSD	I QC ASSOCIATED WITH Blemuth by ICP Bismuth by ICP	7440-69-9	94.800	0.0000000000000000000000000000000000000	05/06/03	75.000	125.000				
Lab ID:		7440-69-9	94.540	% Recov	05/06/03	75,000	125.000				
BATCH	I QC ASSOCIATED WITH										
MSD	Blamuth by ICP Blamuth by ICP	7440-69-9 7440-69-9	94.780 95.040	er e di Madalana anno e	05/06/03 05/06/03	75.000 75.000	125.000 125.000				
200-2000 000000000000000000000000000000		-					126,000				
Lab ID: BATCH	W030000159 QC ASSOCIATED WITH	SAMPLE		i							
MS	Blemuth by ICP	7440-69-9	94,250	0.0000000000000000000000000000000000000	05/06/03	75.000	126.000				
MSD SPK-RPD	Bismuth by ICP Bismuth by ICP	7440-69-9 7440-69-9	93.540 0.767	% Recov	05/06/03 05/08/03	75.000 0.000	125.000 20.000				
ватсн	·			000000000000000000000000000000000000000							
BLANK	Bismuth by ICP	7440-69-9	< 6.8e-2	ug/L	05/06/03	-1.000	0.068				
ECS	Blemuth by ICP	7440-68-9	115,200	% Recov	05/06/03	80,000	120.000				
Lab ID:						•					
BATCH MS	QC ASSOCIATED WITH	SAMPLE 7440-50-8	102.780	& Bachy	06/06/03	70.000	136,000				
MSD	Boron by ICP	7440-50-8	101.300	% Racov		75.000	125.000				
Lab ID:	W030000158										
	QC ASSOCIATED WITH			-			•				
MS MSD	Boron by ICP Boron by ICP	7440-50-8 7440-50-8	101.160 100.840	% Recov	and a substitution of the	70.000 75.000	130,000 125,000				
Lab ID:	W030000159			1666 a. 1050 14680 1666	,						
	QC ASSOCIATED WITH	SAMPLE			•						
MS MSD	Boron by ICP Boron by ICP	7440-50-8 7440-50-8	100,820 100,040	% Recov % Recov		70,000	130,000				
SPK-RPD	Boron by ICP	7440-50-8 7440-50-8	-0,135		05/06/03 05/06/03	75.000 0.000	125,000 20,000				
ВАТСН	OC		21 17 18 18 18 18 18 18 18 18 18 18 18 18 18								
BLANK	Boron by ICP	7440-50-8	<9.5		05/06/03	-10.000	10.000				
LCS	Boron by ICP	7440-50-8	217.163	% Recov	06/06/03	52,000	B4.200 +				

Date:

17 November 2003

To:

Fluor Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

200-PW-2/200-PW-4 OU - Borehole Soil Sampling

Subject: Radiochemistry - Data Package No. 30461 (SDG No. 30461)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. 30461 which was prepared by WSCF. A list of samples validated along with the analyses reported and the requested analytes is provided in the following table.

Sample ID	Sample	Media	Validation	Analysis
B16RX8	4/4/03	Soil	С	See note 1 & 2
B16RX9	4/4/03	Soil	С	See note 1 & 2

Gamma spectroscopy and alpha spectroscopy.

2 - Gamma spectroscopy results for sample B16RX6 were re-analyzed and reported separately in data package WSCF20031181. It is the re-analysis data that was validated and is contained in this report. Due to an exponent error, the americium(gea) result was corrected and SDG WSCF20031181was re-reported.

Data validation was conducted in accordance with the FHI validation statement of work and the 200-PW-2 Uranium-Rich Process Waste Group Operable Unit RI/FS Work Plan and RCRA TSD Unit Sampling Plan (DOE/RL-2000-60, Rev. 1, December 2000). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Documentation Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

000001

Laboratory (Method) Blanks

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the required detection limit (RDL), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the minimum detectable activity (MDA) are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

Due to laboratory blank contamination, all bismuth-214 and radium-226 results in sample B16RX8 and the lead-214 result in sample B16RX9 were qualified as estimates and flagged "J".

All other laboratory blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis, therefore, no field blank data was available for review.

Accuracy

Accuracy is evaluated by analyzing distilled water or field samples spiked with known amounts of radionuclides. The sample activity as determined by analysis is compared to the known activity to assess accuracy. The acceptable laboratory control sample (LCS) and matrix spike (MS) recovery range is 80-120%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, rejected, or not qualified, depending on the activity of the individual sample.

All accuracy results were acceptable.

Precision

Analytical precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Precision may also be assessed using unspiked duplicate sample analyses. If both sample and replicate activities are greater than five times the contract required detection limit (CRDL) and the RPD is less than +/- 35 percent, the results are acceptable. If either activities are less then five times the CRDL, a control limit of less than or equal to two times the CRDL is used for soil samples and less than or equal to the CRDL for water samples. If either the original or replicate value is below the CRDL, the applicable control limits are less than or equal to the CRDL for water samples and less than or equal to two times the CRDL for soil samples. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All duplicate results were acceptable.

Field Duplicate Samples

No field duplicate results were submitted for analysis.

Detection Levels

Reported analytical detection levels are compared against the target quanitiation limits (TQLs) to ensure that laboratory detection levels meet the required criteria. All reported laboratory detection levels met the analyte specific TQL.

• Completeness

Data package SDG No. 305461 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to laboratory blank contamination, all bismuth-214 and radium-226 results in sample B16RX8 and the lead-214 result in sample B16RX9 were qualified as estimates and flagged "J". Data flagged "J" is an estimate, but under the FHI validation SOW, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

FHI, Contract #20266, Validation Statement of Work, Fluor Hanford Incorporated, July 7, 2003.

DOE/RL-2000-60, Rev. 1, 200-PW-2 Uranium-Rich Process Waste Group Operable Unit RI/FS Work Plan and RCRA TSD Unit Sampling Plan, December 2000.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the FHI statement of work are as follows:

- Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.
- UJ Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

Appendix 2
Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: 30461	REVIEWER: TLI	DATE: 11/17/03	PAGE_1_OF_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Bismuth-214 Radium-226	J	All	Blank contamination
Lead-214	J	B16RX9	Blank contamination

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: FLUOR-HANF	ORD			1							
Laboratory: WSCF				1							
Case	SDG: 1	WSCF20030	1461								
Sample Number		B16RX8		B16RX9				1			
Remarks											
Location										1	
Sample Date		4/4/03		4/4/03							
Radiochemistry	TQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Americium-241	1	0.170	υ	0.0210	υ		1				
Plutonium-238	1	0.0360	U	0.0200	U		T				1
Plutonium-239/240	1	0.00890	U	0.0300	П		1		1	Ì	╗
Uranium-234	1	3.60		5.40			Τ.		7		
Uranium-235	1	0.420		0,650	П		1				1
Uranium-238	1.	28.0		41.0					1		\top
Cobalt-60	0.05	-0.00634	Ū	-0.00455	U						\top
Antimony-125		0.0251	Ū	0.0132	v				1	i	\top
Cesium-134		0.0251	U	0.0294	U		1		7		
Cesium-137	0.1	-0.0159	U	-0.00593	υ				7		T-
Europium 162	0.1	-0.00318	U	-0.0297	ΰ		\top				1
Europium 164	0.1	-0.0182	υ	-0.00451	د				Т		\top
Europium 166	0.1	-0.00959	٥	0.0588	د						1
Tin-126		0.00719	υ	-0.0238	٥						
Radium-228	0.2	0.586		0.515							7
Radium-226	0.1	0.484	J	0.372	7						
Zinc-65		-0.000280	J	0.0132	J						
Nlobium-94		-0.00141	υ	0.00731	U						
Ru-103		0.00400	J	-0.00162	٦						
Ru-106		0,0406	Ų	-0.0290	Þ						T
Tin-113		-0.00307	U.	0.00118	ح						
Cerlum-144		0,0162	Ų	0.00552	þ						
Thallium-208		0.182		0,169							
Bismuth-212		0.467	L	0.316							
Lead-212		0.588		0.558				·			
Bismuth-214		0.484	J	0.372	J						
Lead-214		0.533		0.426	J						
Actinium-228		0.586		0.515							
Thorium-234		34.4		37.3							
Uranium-235		0.517		0.618							
Americium-241		1.88 e-10	U	0.895	U						

Attention: Project:

Steve Trent

F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

					WSCF								
Sample #	Client ID	CAS#	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
W030000159	B16PX8 GPP	7664-41-7	Ammonia (NI by IC	SOLID	LA-503-401		6 22	ug/g	50,00	0,20	04/23/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	57-12-5	Cyanide by Midi/Spectrophotom	SOLID	LA-695-402	บ	< 0.200	mg/kg	0.98	0.20	04/15/03	04/04/03	04/04/03
W030000159	B16PX8 GPP	T\$	Percent Solids	SOLID	LA-519-412		94,1	%		0.0	04/22/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	PH	pH Soil and Waste Measurement	SOLID	LA-212-411		9.60	pН	,	0.010	04/22/03	04/04/03	04/04/03
W030000159	BISRXB GPP	12587-46-1	Alpha by liquid scintillation	SOLID	LA-508-421		12.0	pCi/g		1.7	04/09/03	04/04/03	04/04/03
W030000169	B16RX8 GPP		Alpha error by LC	SOLID	LA-508-421		41.0	%		0.0	04/09/03	04/04/03	04/04/03
W030000159	B16RXB GPP	12587-47-2	Beta by liquid scintillation	SOLID	LA-508-421		35,0	pCi/g		3.1	04/09/03	04/04/03	04/04/03
W030000159	B16RX8 GPP		Beta error by LC	SOLID	LA-508-421		30.0	%		0.0	04/09/03	04/04/03	04/04/03
W030000159	BIGRX8 GPP	540-61-2	2-Bromosthanol	SOLID	Organics		1.40a+04	ug/kg		5.0e+03	05/02/03	04/04/03	04/04/03
W030000159	ereteraturatetetekselen namakarietakaranan oleh elektristatura	60-29-7	Diethyl ether	SOLID	Organics	υ	< 5.00e+03	ug/kg		5.0e+03	05/02/03	04/04/03	04/04/03
W030000159		107-21-1	Ethylana glycol	SOLID	Organics	IJ	< 5.00e+03	ug/kg		5.0s+03	05/02/03	04/04/03	04/04/03
W030000159	n de deci de	67-56-1	Methanol	SOLID	Organics	Ų.	< 1.00e+03	ug/kg	. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4.	1.0e+03	05/02/03	*	Acres de la companya
04460464666	B16RX8 GPP	14596-10-2	Am-241 by AEA	SOLID	EA-508-471	U	0.170	pCl/g		0.26	04/18/03	\$4 \$ 457573447\$43457575	100000000000000000000000000000000000000
neterioristativi servici su su su su su su su su	And the second of the second o	E,T,C	Am-241 by AEA Total Critg Error	SOLID	LA-508-471	did wasting	98.0	%	nanumu unumumahan asas	0.0			04/04/03
W030000159	dataran arak dan bahasa ba	24959-67-9	Bromide (Br) by IC	SOLID	LA-533-410	U	<: 0.900	ug/g	20.00	0.90	04/09/03		
W030000159		16887-00-6	Chloride (CI) by (C	SOLID	LA-533-410	lededatabatakan da	20.7	ug/g	20.00	0.28	04/09/03		Contained the Contained
W030000159		16984-48-8	Fixorida (F) by IC	SOLID	LA 533-410	вх	0.981	n8/8	20.00	0.14	04/09/03		ABRORIS (SPECIAL)
W030000159		NO3-N	Nitrate (N) by IC	SOLID	LA-533-410	ringsteilierier	447	ug/g	9.89a+00	interestation in the contract of the contract	04/09/03		estatutut et et et et et et e
W030000159		NO2-N 14265-44-2	Nitrita (N) by IC	SOLID	LA-533-410		0.451	ug/g	20.00	0.18	04/09/03	યતઘમાં મામન	
W030000159		14265-44-2	Phosphate (P) by IC Sulfate (SO4) by IC	SOLID	LA-533-410	B	4,33	ug/g matalyama	20.00	0.26			04/04/03
W030000159	(464248496343484848485691958764846184656); 6. 61648484848484646464	E,T,C	Ac-228 Ref. % Count Error (GEA)	SOLID	LA-533-410		(18	ug/g	20.00	0.48	04/09/03		\$
W030000159	ويعرفوه والمنابع والمراوي والمراوي والمراوي والمراوي والمراوي والمراوي والمراوي والمراوي	14331-83-0	Ac-228 by GEA	SOLID	LA-508-462 LA-508-462		16.8	% 	namedica:	0.0	ar and an area of a contract o	ana ranga ay kaharana	04/04/03
W030000159		E,T,C	Am-241 Rei.% Count Error (GEA)	SOLID	LA-508-462		0.460	pCI/g %		0.036		454,451,451,451	04/04/03
W030000159	14 Ta	14596-10-2	Am-241 by GEA	SOLID	LA-508-462	ija jeure	23.4 0.726	70 pCi/g		0.0	nan a managan an	Andreas Control	04/04/03
W030000159	(449) 4: 4: 4: 4: 4: 4: 6: 6: 6: 6: 6: 6: 6: 6: 6: 6: 6: 6: 6:	E,T,C	BI-212 Rel.% Count Error (GEA)	SOLID	LA-508-462	× III	33.6	96 96		0.0		munustus:	04/04/03
W030000159	no object programme and the forest restrict in the construction of	14913-49-6	BI-212 by GEA	SOLID	LA-508-462	deletatetete				enenenenenenenenenenenenenenenenenenen	. Tarangan kangangan dan kangan	********	04/04/03
		14913-4970	ALT I THE MEN	SULIU	LM-0U8-462		0.270	pCi/g		0.092	04/08/03	P4104103	V4104103

MDL=Minimum Detection Limit RQ=Result Qualifier

- B The analyte < the RDL but > = the IDL/MDL (inorganic)
- J Estimated Value
- X Other flags and notes described in the comments/narrative.

DF=Dilution Factor

+ - Indicates more than six qualifler symbols

Report W004/ver. 5.1



E - Analyte is an estimate, has potentially larger errors

U - Analyzed for but not detected above limiting criteria.

^{* -} Indicates results that have NOT been validated;

Attention: Project:

Steve Trent F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

**	oject.	105 000. 200 1 11	211 11, 4		THOOD							
Sample#	Client ID	CAS#	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze Sample	Receive
W030000159	BIGRX8 GPP	7440-50-8	Copper by ICP-MS	SOLID	LA-505-412		12.9	ug/g	0.49	0.24	04/15/03 04/04/03	
W030000159	B16RX8 GPP	7439-92-1	Lead by ICP-MS	SOLID	LA-505-412	848484848484949	2.80	ug/g	0,49	0.58	04/15/03 04/04/03	04/04/03
W030000159	B16RX8 GPP	7439-96-5	Manganese by ICP-MS	SOLID	LA-505-412		433	ug/g	4.86	1.5	04/15/03 04/04/03	04/04/03
W030000159	B16RX8 GPP	7439-97-6	Mercury by ICP-MS	SOLID	LA-505-412	U U	< 0.0486	ug/g	0.49	0.049	04/15/03 04/04/03	04/04/03
W030000159	BISRX8 GPP	7439-98-7	Molybdenum by ICP-MS	SOLID	LA-505-412	E	1,54	ug/g	4.86	1.5	04/15/03 04/04/03	04/04/03
W030000159	B16RX8 GPP	7440-02-0	Nickel by ICP-MS	SOLID	LA-505-412	\$9-15109-1250 <u>2</u> 909	6.25	ug/g	0.49	0.24	04/15/03 04/04/03	04/04/03
W030000159	B16RX8 GPP	7782-49-2	Salenium by ICP-MS	SOLID	LA-505-412	ΕŮ	< 1.46	ug/g	4.86	1.5	04/15/03 04/04/03	04/04/03
W030000159	B16RX8 GPP	7440-22-4	Silver by ICP-MS	SOLID	LA-505-412	Robin Robertain	0.118	ug/g	0.49	0.097	04/15/03 04/04/03	04/04/03
W030000159	B16RX8 GPP	7440-28-0	Thalikum by ICP-MS	SQLID	LA-505-412		0.121	ug/g	0.49	0.049	04/15/03 04/04/03	04/04/03
W030000159	B16RX8 GPP	7440-29-1	Thorium by ICP-MS	SOLID	LA-505-412	anagu akungnana	2.41	ug/g	0.49	0.097	04/15/03 04/04/03	04/04/03
W030000159	B16RXB GPP	7440-61-7	Uranium by ICP-MS	SOLID	LA-505-412		118	ug/g	4.86	0.49	04/15/03 04/04/03	04/04/03
W030000159	B16RX8 GPP	7440-62-2	Vanadium by ICP-MS	SOLID	LA-505-412		104	ug/g	4.86	1.9	04/15/03 04/04/03	04/04/03
W030000159	B15RXB GPP	7440-68-6	Zinc by ICP-MS	SOLID	LA-505-412		58.8	ug/g	4.86	19	04/15/03 04/04/03	04/04/03
W030000159	B16RX8 GPP	TPH-G	Total Pet. Hydrocarbons Gas	SOLID	NWTPH	U	< 250	ug/kg		2.5e+02	04/16/03 04/04/03	04/04/03
W030000169	BIGRX8 GPP	13981-16-3	Pu-238 by AEA	SOLID	LA-508-471	U	0.0360	pCi/g		0.066	04/17/03 04/04/03	04/04/03
W030000159		E,T,C	Pu-238 by AEA Total Cntg Error	SOLID	LA-508-471		120	%		0.0	04/17/03 04/04/03	04/04/03
W030000159		ET.C	Pu-239/240 AEA Total Chtg Err	SOLID	LA-508-471		100	%		6.0	04/17/03 04/04/03	04/04/03
		PU-239/240	Pu-239/240 by AEA	SOLID	LA-508-471	U	8,90e-03	pCi/g		0.066	04/17/03 04/04/03	04/04/03
_M03000018a	194849494948491948448814884484448	120-82-1	1,2,4-Trichlorobenzene	SOLID	LA-523-456	U	< 310	ug/kg	1.00	3.10+02	04/18/03 04/04/03	04/04/03
<u> </u>	B16RX8 GPP	95-50-1	1,2-Dichlorobenzene (SV)	SOLID	LA-523-456		< 380	ug/kg	1.00	3.8e +02	04/18/03 04/04/03	04/04/03
W030000159	(4) (4) (4) (4) (4) (4) (4) (4) (4) (4)	541-73-1	1,3-Dichloroberizana	SOLID	LA-523-456	υ	< 340	ug/k g	1,00	3,4++02	04/18/03 04/04/03	04/04/03
A mentional recommendation	B16RX8 GPP	106-46-7	1,4-Dichlorobenzene (SV)	SOLID	LA-523-456	U	< 330	ug/kg	1.00	3.3e+02	04/18/03 04/04/03	04/04/03
W030000159		95-95-4	2,4,5-Trichlorophenol	SOLID	LA-523-456	U	< 710	ug/kg	1.00	7.16+02	04/18/03 04/04/03	04/04/03
W030000159	B16RX8 GPP	88-06-2	2,4.6-Trichlorophenol	SOLID	LA-523-456	บ	< 71.0	ug/kg	1.00	71	04/18/03 04/04/03	04/04/03
W030000159	BIGAX8 GPP	120-83-2	2.4-Dichlorophenol	SOLID	LA-523-456	ט	< 85.0	ug/kg	1,00	85	04/18/03 04/04/03	04/04/03
elever in the elevery of the elevery elevery	B16RX8 GPP	105-67-9	2,4-Dimethylphenol	SOLID	LA-523-456	U	< 71.0	ug/kg	1.00	71	04/18/03 04/04/03	04/04/03
W030000159	BIGRXO GPP	51-28-5	2,4-Dinitraphenol	SOLID	LA-523-456	Ü	< 710	ug/kg	1.00	7.1e+02	04/18/03 04/04/03	04/04/03

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Report W004/ver. 5.1

Attention: Project:

Steve Trent

F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

						WSCF								
Sample #	Client ID		CAS#	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
W030000159		PP	126-73-8	Tri-n-butylphosphate	SOLID	LA-523-456	J	94.0	ug/kg	1,00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 G	PP	111-44-4	bis(-2-Chlorosthyl) Eth	SOLID	LA-523-456	Ų	< 260	ug/kg	1.00	2.6e+02	04/18/03	04/04/03	04/04/03
W030000159		PP	111-91-1	bis(2-Chloroethoxy)methane	SOLID	LA-523-456	U	< 120	ug/kg	1 00	1.2e+02	04/18/03	04/04/03	04/04/03
W030000159		PP	13966-29-5	U-234 by AEA	SOLID	LA-508-471	141414141.54141414141	3.60	pCi/g	*.*.*,**,**.	0.099	04/28/03	04/04/03	04/04/03
W030000159	40 4 6 4 6 4 6 4 6 4 6 4 6 4 6 4 6 4 6 4	PP	ET.C	U-234 by AEA Total Cntg Error	SOLID	LA-508-471		22,0	%		0.0	04/28/03	04/04/03	04/04/03
W030000159	eteration and a second	PP	15117-96-1	U-235 by AEA	SOLID	LA-508-471		0.420	pCi/g	****************	0.093	04/28/03	04/04/03	04/04/03
W030000159		PP	E.T,C	U-235 by AEA Total Cntg Error	SOLID	LA-508-471		38.0	%		0.0	04/28/03	04/04/03	04/04/03
W030000159	and the commence of the contract of	PP .nomenomo contrata a secondo	24678-82-8	U-238 by AEA	SOLID	LA-508-471		28.0	pCl/g		0.067	04/28/03	04/04/03	04/04/03
W030000159		PP*	ET,C	U-238 by AEA Total Cntg Error	SOLID	LA-508-471		19,0	%		0.10	04/28/03	04/04/03	04/04/03
W030000159	adoteda retada rata da la caracia.	Nacional and communication and a second contraction and a	75-35-4	1,1-Dichloroethene	SOLID	LA-523-455	υ	< 2.10	ug/kg	1.00	2.1	04/16/03	04/04/03	04/04/03
W030000159		<u>P</u>	71-36-9	1-Butanoi	SOLIO	LA-523-455	U	< 21.0	ug/kg	1.00	21	04/16/03	04/04/03	04/04/03
W030000159		PP 4486666666666666666666666666666666666	71-43-2	Benzene	SOLID	LA-523-455	U	< 2.10	ug/kg	1.00	2.1	04/16/03	04/04/03	04/04/03
W030000159			108-90-7	Chlorobenzene	SOLID	LA-523-455	¥	< 2,10	ug/kg	1.00	2.1	04/16/03	04/04/03	04/04/03
W030000159		PP <u>Ele</u> tropologico establista establista.	108-88-3	Toluene	SOLID	LA-523-455	U	< 2.10	ug/kg	1.00	2.1	04/16/03	04/04/03	04/04/03
W030000159	14949:10:00:00:00:00:00:00:00:00:00:00:00:00:		79:01:6	Trichloroethene	SOLID	LA-523-455	U	< 2.10	Ug/kg	1.00	2.1	04/16/03	04/04/03	04/04/03
W030000159 W030000159	n netetatatanan ataupakan sebe	PP AARRIBEEDE DE BERNESE VE	8008-20-6	Kerosene Allahalahahalahan dan menganggan	SOLID	NWTPH	U	< 4.20e+03	ug/kg	1.00	4.26+03	*		04/04/03
W030000159		PP PP	68476-34-6	Total Pet: Hydrocarbons Diesel	SOLID	NWTPH	J	7.80∉+03	ug/kg	1.00	4.26+03	05/01/03	04/04/03	04/04/03
W030000160	(T. T. K.C. K.C. K.C. K.C. K.C. K.C. K.C.		84-15-1 7664-41-7	ortho-Terphenyl	SOLID	NWTPH	etetecetere habarana	2.00c+04	ug/kg	1,00	2.1e+02			04/04/03
Ow030000160	B16RX9 GI	\$	57-12-5	Ammonia (N) by (C	SOLID	LA-503-401		6.79	ug/g	50.00	0.20	entercreat		04/04/03
Owo30000160	tededadatakokokokok kokukoko	rr PP: :::::::::::::::::::::::::::::::::	ti bababi suburururu sasar i sasar i sasar	Cyanide by Midi/Spectrophotom Percent Solids	SOLID	LA-695-402	U Harristeria	< 0.200	mg/kg	0.99	0.20	sanataran sarataran		04/04/03
Ow030000160	B16RX9 G	1958,485,1949,1949,1949,595,494,595,499,499,599	.4644466644664466667		SOLID	LA-519-412		94.1	%		0.0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		04/04/03
W030000160	BIGRX9 G		randranica in the apprehensive ex-	pH Soil and Waste Measurement	SOLID	LA-212-411	4-1-4-1-1-1-4	9.59	pH -regeraterense		0.010	موميم وأحوديا أحوميم		04/04/03
ω _{w030000160}			472727274772777777474747474747	Alpha by liquid scintillation	SOLID	LA 508-421		12.0	pCVg		1.8	epitet etter etter ette		04/04/03
W030000160		 Catalografiata na mari no contono hono hono de contono de la contono de la contono de la contono de la contono	adadada tahun arahaharahatan adada kur	Alpha error by LC were some opening and a second or a	SOLID	LA-508-421	i vel leleterededese	50.0	%	ieteokokokokokoko	0.0	tatat (to tatatata sa sa	*******	04/04/03
W030000160	B16RX9 GI	(888) 868 (868) (1683) (1684) 868	RM 6 2 4 2 6 2 6 1 4 2 4 2 6 2 6 2 4 2 4 2 4 2 4 2 4 2 4 2	Beta by liquid scintillation	SOLID	LA-508-421		35,0	pCi/g		3.4	er en en en en en		04/04/03
W030000160	and the second second second second	inderty field kind with the telephone two concerns where	early continued the continued the continued to	randina terbeda da beda da da da properciones con escriber de construencia de la construencia de la construencia de construencia de la construenci	SOLID	LA-508-421	1-1-1-1-1-1-1-1-1	31.0	% av adstatatat	edestedes debes electe	0.0			04/04/03
	******* °		540-51-2	2-Bremoethanol	SOLID	Organics		1.30e+04	ug/kg		5.0s+03	05/02/03	04/04/03	04/04/03

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Report W004/ver. 5.1



Attention: Project:

Steve Trent

F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

	-				WSCF						
Sample #	Client ID	CAS#	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	Analyze Sample Receive
W030000160	BISAX9 GPP	60-29-7	Diethyl ether	SOLID	Organics	Ų	< 5.00€ + 03	ug/kg		5.04+03	05/02/03 04/04/03 04/04/03
W030000160	B16RX9 GPP	107-21-1	Ethylene glycol	SOLID	Organics	U	< 5.00e+03	ug/kg	-5-1 1 1-2-2-2-2-1-1	5.0e+03	05/02/03 04/04/03 04/04/03
W030000160	B16RX9 GPP	67-56-1	Methanol	\$OLID:	Organics	U	< 1,00e+03	ug/kg		1.0e+03	05/02/03 04/04/03 04/04/03
W030000160	B16RX9 GPP	14596-10-2	Am-241 by AEA	SOLID	LA-508-471	U	0.0210	pCi/g	11111111111111111111111111	0.31	04/18/03 04/04/03 04/04/03
W030000160	B16RX9 GPP	ET.C	Am-241 by AEA Total Cotg Error	SOLID	LA-508-471		840	%		0.0	04/18/03 04/04/03 04/04/03
W030000160	B16RX9 GPP	24959-67-9	Bromide (Br) by IC	SOLID	LA-533-410	υ	< 0.855	ug/g	19.00	0.86	04/10/03 04/04/03 04/04/03
W030000160	BIGRX9 GPP	16887-00-6	Chloride (CI) by IC	SOLID	LA-533-410		19.4	ug/g	19.00	0.27	04/10/03 04/04/03 04/04/03
W030000160	B16RX9 GPP	16984-48-8	Fluoride (F) by IC	SOLID	LA-533-410	******	1.03	ug/g	19.00	0.13	04/10/03 04/04/03 04/04/03
W030000160	B16RX9 GPP	NO3-N	Nitrate (N) by IC	SOLID	LA-533-410		415	ug/g	9.82e+00	2 4.9	04/09/03 04/04/03 04/04/03
W030000160	B16RX9 GPP	NO2-N	. Nitrite (N) by IC	SOLID	LA-533-410		0.406	ug/g	19.00	0.17	04/10/03 04/04/03 04/04/03
M030000160	B16RX9 GPP	14265-44-2	Phosphate (P) by IC	SOLID	LA-533-410		5.04	ug/g	19.00	0.25	04/10/03 04/04/03 04/04/03
W030000160	B16RX9 GPP	14808-79-8	Sulfate (SO4) by IC	SOLID	LA-533-410		114	ug/g	19.00	0.46	04/10/03 04/04/03 04/04/03
W030000160		E.T.C	Ac-228 Rel.% Count Error (GEA)	SOLID	LA-508-462		16.9	%		0.0	04/09/03 04/04/03 04/04/03
W030000160		14331-83-0	Ac-228 by GEA	SOLID	LA-508-462		0.429	pCi/g		0.037	04/09/03 04/04/03 04/04/03
M030000160		E.T.C	Am-241 Rel.% Count Error (GEA)	SOLID	LA-508-462		78.4	%		0.0	04/09/03 04/04/03 04/04/03
W030000160	20. Table 10. Ta	14596-10-2	Am-241 by GEA	SOLID	LA-508-462	υ	0.152	pCi/g		0.17	04/09/03 04/04/03 04/04/03
W030000160	B16RX9 GPP	ET.C	Bi-212 Rel.% Count Error (GEA)	SOLID	LA-508-462		30.9	%		0.0	04/09/03 04/04/03 04/04/03
W030000160	tation to the first of a fortist and a factor of a foreign and a fortist and a fortist of a fortist and a fortist of a fortist and a fortist a	14913-49-6	Bi-212 by GEA	SOLID	LA-508-462		0.288	pCi/g		0.093	04/09/03 04/04/03 04/04/03
W030000160	HERRERE LEGISLEGISCHE GERMEN GERMEN	E,T,C	B-214 Rel.% Count Error (GEA)	SOLID	LA-508-462		16.6	%		0.0	04/09/03 04/04/03 04/04/03
W030000180	rayania idi evanya yakin menenga atampanya yakin yakin yakin kunikaran ka	14733-03-0	BI-214 by GEA	SOLID	LA-508-462		0.362	pCi/g		0.023	04/09/03 04/04/03 04/04/03
_ W030000160		ETiC	Ce-144 Rel.% Count Error (GEA)	SOLID	LA-508-462		392	96		0.0	04/09/03 04/04/03 04/04/03
WU3000160		14762-78-8	Ce-144 by GEA	SOLID	LA-508-462	U	0.0198	pCl/g		0.12	04/09/03 04/04/03 04/04/03
₹ M030000180		E.T.C	Co-60 Ref. % Count Error (GEA)	SOLID	LA-508-462		322	%		0.0	04/09/03 04/04/03 04/04/03
W030000160		10198-40-0	Co-60 by GEA	SOLID	LA-508-462	U	1.96e-03	pCi/g		0.011	04/09/03 04/04/03 04/04/03
W030000160	7 (7) Partic Para (Para (Para Para Para Para Para	ET,C	Cs-134 Rel.% Count Error (GEA)	SOLID	LA-508-462		68.6	%		0.0	04/09/03 04/04/03 04/04/03
W030000160	runununun arana kana kana kana kana kana kana ka	13967-70-9	Cs-134 by GEA	SOLID	LA-508-462	U	0.0227	pCi/g		0.015	04/09/03 04/04/03 04/04/03
W030000160	B16RX9 GPP	ET,C	Ca-137 Rel.% Count Error (GEA)	SOLID	LA-508-462		1.00e+03	%		0.0	04/09/03 04/04/03 04/04/03

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Report W004/ver. 5.1

Ground Water Protection Program

sopsifol

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Attention: Project: Steve Trent

F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

Y.F.	oject.	1.03-0	00: Z00-FW	-2/P W-4										
Sample #	Client II)	CAS#	Test Performed	Matriu	WSCF	no.	D14	T 7 - *4	ЮE) (D)	A B	C1-	ntai
W030000160		GPP	7440-29-1		Matrix	Method	RQ	Result	Unit	DF	MDL			Receive
W030000160				Thorium by ICP-MS	SOLID	LA-505-412		2.73	ug/g	0.48	30,0	04/15/03		
*******************		GPP CARRONNELLE	7440-61-1	Uranium by ICP-MS	SOLID	LA-505-412		130	ug/g	4.79	0.48	04/15/03	04/04/03	04/04/03
W030000160		GPP	7440-62-2	Vanadium by ICP-MS	SOLID	LA-505-412		108	ug/g	4.79	1,9	04/15/03	04/04/03	04/04/03
W030000160		GPP stateded to be become not	7440-66-6	Zinc by ICP-MS	SOLID	LA-505-412		57.3	ug/g	4.79	19	04/15/03	04/04/03	04/04/03
W030000160		GPP	трн-с	Total Pet: Hydrocarbons Gas	SOLID	NWTPH	U	< 250	ug/kg		2.5e+02	04/16/03	04/04/03	04/04/03
→ W030000160		GPP	13981-16-3	Pu-238 by AEA	SOLID	LA-508-471	U	0.0200	pCi/g		0.27	04/17/03	04/04/03	04/04/03
W030000160	वंद्यविद्यासम्बद्धाः	GPP	E,T,C	Pu-238 by AEA Total Cntg Error	SOLID	LA 508-471		760	%		0.0	04/17/03	04/04/03	04/04/03
W030000160		GPP	E,T,C	Pu-239/240 AEA Total Cntg Err	SOLID	LA-508-471	• ••••••••••••••	120	%	24.1.12	0.0	04/17/03	04/04/03	04/04/03
W030000160	816RX9	GPP	PU-239/240	Pu-239/240 by AEA	SOLID	LA-508-471		0.0300	pCI/g		0.027	04/17/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	120-82-1	1,2,4-Trichlorobenzene	SOLID	LA-523-456	U	< 310	ug/kg	1.00	3.1e+02	04/22/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	95-50-t	1,2-Dichlprobenzene (SV)	SOLID	LA-523-456	U	< 370	ug/kg	1.00	3.7e + 02	04/22/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	541-73-1	1,3-Dichlorobenzene	SOLID	LA-523-456	U	< 330	ug/kg	1.00	3.3e+02	04/22/03	04/04/03	04/04/03
W030000160	B15RX9	GPP	106-46-7	1.4-Dichlorobenzene (SV)	SOLID	LA-523-456	Ü	< 330	ug/kg	1.00	3,3e+02	04/22/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	95-95-4	2,4,5-Trichlorophenol	SOLID	LA-523-456	U	< 76.0	ug/kg	1.00	76	04/22/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	88-06-2	2,4,6-Trichlorophenol	SOLID	LA-523-456	Ü	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	120-83-2	2,4-Dichiorophenol	SOLID	LA-523-456	U	< 83.0	ug/kg	1.00	83	04/22/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	105-67-9	2.4-Dimethylphenol	SQLID	LA-523-456	u	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	51-28-5	2,4-Dinitrophenol	SOLID	LA-523-456	U	< 230	ug/kg	1.00	2.3e + 02	04/22/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	121-14-2	2,4-Dinitrotoluene	SOLID	LA-523-456	บ	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	606-20-2	2,6-Dinitrotoluene	SOLID	LA-523-456	ini minini U	**************************************	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W 030000160	B15FLX9	GPP	111-76-2	2-Butaxyethanot	SOLID	LA-523-456	Ú	< 100	ug/kg	1.00	1.0e+02	04/22/03		e de la constanta de la consta
W030000160	B16RX9	GPP	91-58-7	2-Chloronaphthalene	SOLID	LA-523-456	unioni di	< 83.0	ug/kg	1.00	99999999999999999999999999999999999999	04/22/03		19,9,169,919,699
₩030000180	B16RX9	GPP	96-57-8	2-Chlorophenet	SOLID	LA-523-456	ט	< 150	ug/kg	1.00	1.5s+02	04/22/03		ericario de la como
W030000160		GPP	91-57-6	2-Methylnaphthalene	SOLID	LA-523-456		< 190	ug/kg	1.00	1.9a+02	04/22/03	1:4:4:4:4:4:4:4:4:4:4:4:4:4:4:4:4:4:4:4	1070-0-171-170
W030000160		GPP	95-48-7	2-Methylphenol	SOLID	LA-523-456		< 69.0	ug/kg	1.00	69	04/22/03	والمراز أرار ووأرار والمراز	egest situation of
W030000160	B16RX9	anaganan kan dan dan dan GPP	::::::::::::::::::::::::::::::::::::::	2-Nitroanline	SOLID	LA-523-456	U	< 69.0	ander of e	entarente de				14141151111111111
WQ3000016Q	والمراجع والمراجع والمحاج والمراجع	GPP		2-Nitrophenol	SOLID	in the technique and a finite decimal of the	atata na harana a		ug/kg	. 1.00	69	04/22/03		
				w. sarri www.torioi	JULIU	LA-523-456	U	< 180	ug/kg	1 00	1.8e + 02	04/22/03	04/04/03	04/04/03

MDL=Minimum Detection Limit RQ=Result Qualifier

E - Analyte is an estimate, has potentially larger errors

DF=Dilution Factor

Report W004/ver. 5.1

Ground Water Protection Program

O S

B - The analyte < the RDL but > = the IDL/MDL (inorganic)

J - Estimated Value

X - Other flags and notes described in the comments/narrative.

U - Analyzed for but not detected above limiting criteria. <

^{• -} Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

Attention: Project:

Steve Trent F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

						WSCF								
Sample #	Client II	<u> </u>	CAS#	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
W030000160	816RX9	GPP	84-66-2	Diethylphthalate	SOLID	LA-523-456	В	1.00e+03	ug/kg	1.00	1.9+02	04/22/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	131-11-3	Dimethylphthalate	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	206-44-0	Fluoranthene	SOLID	LA-523-456	Ü	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	86-73-7	Fluorene	SOLID	LA-523-456	V	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W030000160	BI SRX9	GPP	118-74-1	Hexachlorobenzene	SOLID	LA-523-456	ט	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W030000160	erent at at a tarte to the term	GPP	87-68-3	Hexachlorobutadiene	SOLID	LA-523-456	U	< 380	ug/kg	1.00	3.8e+02	04/22/03	04/04/03	04/04/03
W030000160	renerentario de la companya de la c	GPP	77-47-4	Hexachlorocyclopentadiene	SOLID	LA-523-456	ָּט	< 330	ug/kg	1.00	3.3e+02	04/22/03	04/04/03	04/04/03
W030000160		GPP	67-72-1	Hexachloroethane	SOLID	LA-523-456	υ	< 490	ug/kg	1.00	4.96+02	04/22/03	04/04/03	04/04/03
W030000160		GPP	193-39-5	Indena (1, 2, 3-cd) pyrane	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
W030000160		GPP	78-59-1	Isophorone	SOLID	LA-523-456	U	< 69.0	ug/kg	1.00	69	04/22/03	04/04/03	04/04/03
C M030000180		GPP	621-64-7	N-Nitroso-di-n-propylamins	SOLID	LA-523-456		< 69.0	ug/kg	1.00	69	HOPEL CAREE		04/04/03
W030000160	and the second second	GPP	86-30-6	N-Nitrosodiphenylamine	SOLID	LA-523-456		< 69,0	ug/kg	1.00	69	04/22/03		A CANADA CANADA CANADA
		GPP	91-20-3	Naphthalana	SOLID	LA-523-456	U	< 300	ug/kg	1,00	3,0e+02	04/22/03		18070918090909090
W030000160	and the state of the same	GPP	98-95-3	Nitrobenzene	SOLID	LA-523-456	U National designation of the Control of the Contro	< 270	ug/kg	1.00	2.7e+02	04/22/03	هاد . معادم معادم والموادر والموادر	eteletete.etetete
₩030000160		GPP	87-86-5	Pentachiorophenol	SOLID	LA-523-456		< 310	ug/kg	1,00	3.1e+02	04/22/03		annannann
O WOSCOOL 180	en e	GPP BWWMBBBBBBBBBBBBBBBB	85-01-8	Phenanthrens **Lightnian debeddeleterate and course	SOLID	LA-523-456		< 69,0	ug/kg	1.00	69	an a construence and	ewaye ya ye ye ye e cadada	04/04/03
W030000160		GPP	108-95-2	Phono!	SOLID	LA-523-456		< 100	ug/kg	3,00	1.0e+02			04/04/03
W030000160		GPP	129-00-0	Pyrene diwarangadapapan padapan dakan salaban	SOLID	LA-523-456	در دو درد ده ده ده د د د د دود	< 69.0	ug/kg	1.00	69 Seest letektekte soor s	مياه العرامية ويعرف وعرفوه والم	. Para da Para da Para da Cara	04/04/03
W030000160	ugananan	GPP	126-73-8	Tri-n-butylphosphate	SOLID	LA-523-456		100	ng/kg	1,00	69	HERREGAL	energineer.	04/04/03
W030000160		GPP GPP	111-44-4 111-91-1	bis(-2-Chloroethyl)Eth	SOLID	LA-523-456	and the same of the same	< 260	ug/kg	1.00	2.6e+02	04/22/03	rantituta tatabah	cktktktktktktktkt
-W030000160	B16RX9	GPP		bisi2-Chicroethoxyl methane	SOLID	LA-523-456	Y	< 120	ug/kg	1,00	1.2e + 02			04/04/03
1-2-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	energe in tenenterenerge	eterarioristetetetetetetetetetetetetetetetetetete	13966-29-5 E.T.C	U-234 by AEA	SOLID	LA-508-471		5.40	pCi/g	i din du siste e e	0.095		توفوفوني وأردين	04/04/03
W030000160		GPP	:4. ::4::4::4::4::4::4::4::4::4::4::4::4::4	U-234 by AEA Total Cntg Error	SOLID	LA-508-471		21.0	%		9.9	44515144444445454444		04/04/03
ababababa whatebabababababa	salata salabaya	GPP	15117-96-1	U-235 by AEA	SOLID	LA-508-471	Talle kelled et at at a	0.650	pCi/g	1988	0.030	anananatatatatat	tal talendaria	04/04/03
W030000160	B16RX9	GPP GPP	E.T.C 24678-82-8	U-235 by AEA Total Critic Error	SOLID	LA-508-471		32.0	*		0.0			04/04/03
W030000160	energia in terretaria de la com	GPP	240/8-82-8 E.T.C	U-238 by AEA	SOLID	LA-508-471	nundaga berdaga baraka	41.0 (a. 1999)22:03:03:03	pCi/g	dekengtengnyagien:	0.11 :::::::::::::::::::::::::::::::::::	ALCOHOL AND COLOR		04/04/03
ALTI-SOUTON DO	PIDIVA			U-238 by AEA Total Cntg Error	SOLID	LA-508-471		20.0	%		0.10	04/28/03	04/04/03	04/04/03

MDL=Minimum Detection Limit RQ=Result Qualifier

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J - Estimated Value

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E - Analyte is an estimate, has potentially larger errors

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DF=Dilution Factor

* - Indicates results that have NOT been validated;

+ - Indicates more than six qualifier symbols

Report W004/ver. 5.1

Attention: Project: Steve Trent

F03-006: 200-PW-2/PW-4

Group #:

WSCF20031181

	11	oject.		1	03-000. 200-F	VV-2/1 VV-4		Woon						
	Sample#	Client II	D		CAS#	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze Sample Receive
	W030000732	816RX7	DUP	20030460	ET,C	U-235 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 0.101	pCi/g	1.00	0.0	09/10/03 04/04/03 08/27/03
	W030000732	B16RX7	DUP	20030460	13982-39-3	Zinc-65	SOIL	LA-508-462	U	0.0201	pCi/g	1.00	0.027	09/10/03 04/04/03 08/27/03
	W030000732	B16RX7	DUP	20030460	ET.C	Zn-65 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 0.0178	pCi/g	1,00	0,0	09/10/03 04/04/03 08/27/03
	W030000732	B16RX7	DUP	20030460	14331-83-0	Actinium-228	SOIL	LA-508-462	2.2.1	0.552	pCi/g	1.00	0.039	09/10/03 04/04/03 08/27/03
	W030000732	B16RX7:	DUP	20030460	E.T.C	Ac-22B Ref. Count Error (GEA)	SOIL	LA-508-462		+- 0,0795	pCi/g	1.00	0.0	09/10/03 04/04/03 08/27/03
	W030000732	B16RX7	DUP	20030460	14913-49-6	Bismuth-212	SOIL	LA-508-462		0.424	pCi/g	1.00	0.088	09/10/03 04/04/03 08/27/03
	W030000732	B16RX7	DUP	20030460	E,T,C	BI-21 2 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 0.128	pCi/g	1.00	0.0	09/10/03 04/04/03 08/27/03
	W030000732	B16RX7	DUP	20030460	14733-03-0	Bismuth-214	SOIL	LA-508-462		0.435	pCi/g	1.00	0.022	09/10/03 04/04/03 08/27/03
$\overline{}$	W030000732	B16RX7	DUP	20030460	E.T.C	Bi-214 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 0.0600	pCi/g	1.00	0.0	09/10/03 04/04/03 08/27/03
\approx	W030000732	B16RX7	DUP	20030460	15092-94-1	Lead-212	SOIL	LA-508-452		0.577	pCi/g	1.00	0.022	09/10/03 04/04/03 08/27/03
\asymp	W030000732	B16RX7	DUP	20030460	E,T,C	Pb-212 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 0.0537	pCi/g	1.00	0.0	09/10/03 04/04/03 08/27/03
Ξ	W030000732	B16RX7	DUP	20030460	15067-28-4	Lead-214	SOIL	LA-508-462		0.484	pCl/g	1.00	0.024	09/10/03 04/04/03 08/27/03
Ξ	W030000732	B16RX7	DUP	20030460	E.T.C	Pb-214 Ref. Count Error (GEA)	SOIL	LA-508-462		+- 0.0503	pCI/g	1.00	0.0	09/10/03 04/04/03 08/27/03
7	W030000732	B16RX7	DUP	20030460	13968-53-1	Ruthenium-103	SOIL	LA-508-462	U	-1.31e-03	pCi/g	1.00	0.011	09/10/03 04/04/03 08/27/03
\u .	W030000732	B16RX7	DUP	20030460	E,T,C	Ru-103 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 6.31e-03	pCi/g	1.00	0.0	09/10/03 04/04/03 08/27/03
	W030000732	B16RX7	DUP	20030460	13966-06-8	Tin-113	SOIL	LA-508-462	Ü	2.34e-03	pCi/g	1.00	0.014	09/10/03 04/04/03 08/27/03
	W030000732	B16RX7	DUP	20030460	E,T,C	Sn-113 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 8.706-03	pCi/g	1.00	0.0	09/10/03 04/04/03 08/27/03
	W030000732	B16RX7	DUP	20030460	14913-50-9	Thallium-208	SOIL	LA-508-462	•	0.182	pCi/g	1.00	0.011	09/10/03 04/04/03 08/27/03
	W030000732	B16RX7	DUP	20030460	ET,C	TI-208 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 0.0260	pCi/g	1.00	0.0	09/10/03 04/04/03 08/27/03
	W030000733	B16RX8		20030461	14596-10-2	Americium-241	SOIL	LA-508-462	U	0.188	pCi/g	1.00	0.19	09/10/03 04/04/03 08/27/03
	W030000733	816AXB	DUP	20030461	ET.C	Am-241 Rel Count Error (GEA)	SOIL	LA-508-462		+- 0.130	pCi/g	1.00	0.0	09/10/03 04/04/03 08/27/03
	W030000733	B16RX8	DUP	20030461	14234-35-6	Antimony-125	SOIL	LA-508-462	U	6.85e-03	pCi/g	1.00	0.041	09/10/03 04/04/03 08/27/03
	W030000733	B16RXB	DUP	20030461	E.T.C	Sb-125 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 0.0238	pCi/g	1.00	0.0	09/10/03 04/04/03 08/27/03
	W030000733	B16RX8	DUP	20030461	14762-78-8	Cerium-144	SOIL	LA-508-462	U	0.0162	pCi/g	1.00	0.15	09/10/03 04/04/03 08/27/03
	W030000733	B16RX8	DUP	20030461	ETC	Ce-144 Rel. Count Error (GEA)	SOIL	LA-508-462		+• 0.101	pC/g	1.00	0.0	09/10/03 04/04/03 08/27/03
	W030000733	B16RX8	DUP	20030461	10198-40-0	Cobalt-60	SOIL	LA-508-462	U	-6.34e-03	pCi/g	1,00	0.014	09/10/03 04/04/03 08/27/03
	W030000733	B16RX8	DUP	20030461	É.T.C	Co-60 Ref. Count Error (GEA)	SOIL	LA-508-462		+- 8,50 - 03	pCi/g	1.00	0.0	09/10/03 04/04/03 08/27/03

MDL=Minimum Detection Limit

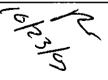
U - Analyzed for but not detected above limiting criteria.

RQ=Result Qualifier

DF=Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

Report WGPP/ver. I



Attention: Project.

Steve Trent F03-006: 200-PW-2/PW-4

Group #:

WSCF20031181

	PT	oject:	FU3-	000: 200-PW	-2/PW-4									
Sı	ımple#	Client II)	CAS#	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze Sampl	e Receive
***	30000733	816RX8	DUP 20030461	13967-70-9	Cesium-134	SOIL	LA-508-462		0.0251	pCi/g	1.00	0.019	09/10/03 04/04/0	
W	030000733	B16RX8	DUP 20030461	E,T,C	Cs-134 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 0.0111	pCi/g	1.00	0.0	09/10/03 04/04/0	1000,000,000
W	30000733	B16RX8	DUP 20030461	10045-97-3	Cesium-137	SOIL	LA-508-462	Ü	-0.0159	pCi/g	1.00	0.015	09/10/03 -04/04/0	3 08/27/03
:"*	30000733		DUP 20030461	E.T.C	Cs-137 Rel. Count Error (GEA)	SOIL	LA-508-462	Ulfrent	+- 0.0159	pCi/g	1.00	0.0	09/10/03 04/04/0	58375858585858485848
W	30000733	B16RX8	DUP 20030461	14683-23-9	Europium-152	SOIL	LA-508-462	5 ii 25	-3.18e-03	pCi/g	1.00	0.044	09/10/03 04/04/0	and the second of the
W	30000733	B16RX8	DUP 20030461	E,T,C	Eu-152 Rel. Count Error (GEA)	SOIL	LA-508-462	47. J	+- 0.0318	pCi/g	1.00	0.0	09/10/03 04/04/0	i, distribiti
Ŵ	30000733	B16RX8	DUP 20030461	15585-10-1	Europium-154	SOIL	LA-508-462	ំប	-0.0182	pCi/a	1.00	0.043	09/10/03 04/04/0	
W	30000733	B16RX8	DUP 20030461	E,T,C	Eu-154 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 0.0315	pCt/g	1.00	0.0	4 전 14 15만 남은 25만만	3 08/27/03
W	30000733	B16RX8	DUP 20030461	14391-16-3	Europium-155	SOIL	LA-508-462	ប្រ	-9 59∉-03	pCI/g	1.00	0.090	09/10/03 04/04/0	
W	30000733	B16RX8	DUP 20030461	E,T,C	Eu-155 Rel. Count Error (GEA)	SOIL	LA-508-462	4 T (84.41)	+- 0.0531	pCi/a	1.00	0.0	09/10/03 04/04/0	
Z w	30000733	B16RX8	DUP 20030461	14681-63-1	Nipblum-94	SOIL	LA-508-462	U	-1.41e-03	pCi/g	1.00	0.014	09/10/03 04/04/0	3 08/27/03
₹₩	30000733	B16RX8	DUP 20030461	E,T,C	Nb-94 Rel. Count Error (GEA)	SOIL	LA-508-462	Es 14 ×	+- 8.71e-03	pCl/q	1.00	0.0	09/10/03 04/04/0	3 08/27/03
Z w	30000733	B16RX8	DUP 20030461	13982-63-3	Radium-226	SOIL	LA-508-462	T	0.484	pCi/g	1.00	0.028	09/10/03 04/04/0	3 08/27/03
w	30000733	B16RX8	DUP 20030461	E.T,C	Ra-226 Rel. Count Error (GEA)	SOIL	LA-508-462	-	+- 0.0770	pCi/g	1.00	0.0	09/10/03 04/04/0	3 08/27/03
W	30000733	B16RX8	DUP 20030461	15262-20-1	Radium-228	SOIL	LA-508-462		0,586	pCi/g	1.00	0.047	09/10/03 04/04/0	3 08/27/03
w	30000733	B16RX8	DUP 20030461	E,T,C	Ra-228 Rel. Count Error (GEA)	SOIL	LA-508-462	4 4	+- 0.0961	pCi/g	1.00	0.0	09/10/03 04/04/0	3 08/27/03
W	30000733	B16RX8	DUP 20030461	13967-48-1	Ruthenium-106	SOIL	LA-508-462	U.	0.0406	pCi/g	1.00	0.13	09/10/03 04/04/0	3 08/27/03
W	30000733	B16RX8	DUP 20030461	E,T,C	Ru-106 Rel. Count Error (GEA)	SOIL	LA-508-462	. + 1.	++ 0.0792	pCi/g	1.00	0.0	09/10/03 04/04/0	3 08/27/03
W	30000733	B16RX8	DUP 20030461	15832-50-5	Tin-126	SOIL	LA-508-462	U	7.19e-03	pCi/g	1.00	8.0a-03	09/10/03 04/04/0	3 08/27/03
W	30000733	B16RX8	DUP 20030461	E,T,C	Sn-126 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 0.0599	pCi/g	1.00	0.0	09/10/03 04/04/0	3 08/27/03
W	30000733	B16RX8	DUP 20030461	15065-10-8	Thorum-234	SOIL	LA-508-462	- 84/4	34.4	pCi/g	1.00	1.4	09/10/03 04/04/0	3 08/27/03
W	30000733	B16RX8	DUP 20030461	E,T,C	Th-234 Rel. Count Error (GEA)	SOIL	LA-508-462	4 7 9	+- 3.75	pCî/g	1.00	0.0	09/10/03 04/04/0	3 08/27/03
W	30000733	B16RX8	DUP 20030461	15117-96-1	Uranium-235	SOIL	LA-508-462	49 日勤	0.517	pCi/g	1.00	0.15	09/10/03 04/04/0	3 08/27/03
W	30000733	B16RX8	DUP 20030461	E,T,C	U-235 Rel. Count Error (GEA)	SOIL	LA-508-462	1 1 1 1	+- 0.129	pCi/g	1,00	0.0	09/10/03 04/04/0	3 08/27/03
W	30000733	B16RX8	DUP 20030461	13982-39-3	Zino 65	SOIL	LA-508-462	U	-2.80a-04	pCi/g	1.00	0.032	09/10/03 04/04/0	3 08/27/03
W	30000733	B16RX8	DUP 20030461	E.T.C	Zn-65 Rel. Count Error (GEA)	SOIL	LA-508-462	nan era e	+- 2.80s-03	pCi/g	1.00	0.0	09/10/03 04/04/0	3 08/27/03
W	30000733	B16RXB	DUP: 20030461	14331-83-0	Actinium-228	SOIL	EA-508-462		0,586	pCi/g	1.00	0.047	09/10/03 04/04/0	3 08/27/03
2474	enements in the enements of	everence bearing few	nun nun nunthu ihi i i e eleteleleleveli	And the second section of	ta utvisionariamenti kii ara a kultirii etelektelekti uu ili 1997 j	Article Control of	 1 (1) (1) (1) (2) 	1000	0.424848484846484545454646	-2*1+1-1-1-1-1-1-1-1-1		A STATE OF STATE	the second of the federal of	de la lacilità di Cal

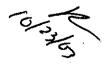
MDL=Minimum Detection Limit

U - Analyzed for but not detected above limiting criteria.

RQ=Result Qualifier

DF=Dilution Factor

* - Indicates results that have NOT been validated; Report WGPP/ver. 1



Attention: Project:

Steve Trent F03-006: 200-PW-2/PW-4

Group #:

WSCF20031181

					WSCF						·
Sample#	Client ID	CAS#	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	Analyze Sample Receive
W030000733	B16RX8 DUP 20030461	E,T,C	Ac-228 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 0.0961	pCi/g	1,00	0.0	09/10/03 04/04/03 08/27/03
W030000733	B16RX8 DUP 20030461	14913-49-6	Bismuth-212	SOIL	LA-508-462	14.41-1441	0.467	pCl/g	1.00	0.12	09/10/03 04/04/03 08/27/03
W030000733	B16RX8 DUP 20030461	E,T,C	Bi-212 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 0.147	pCi/g	1.00	0.0	09/10/03 04/04/03 08/27/03
W030000733	B16RX8 DUP 20030461	14733-03-0	Bismuth-214	SOIL	LA-508-462	$\boldsymbol{\tau}$	0.484	pCi/g	1.00	0.028	09/10/03 04/04/03 08/27/03
W030000733	B16RX8 DUP 20030461	E.T.C	Bi-214 Rel. Count Error (GEA)	SOIL	LA-508-462	, -	+ 0.0770	pCi/g	1.00	0.0	09/10/03 04/04/03 08/27/03
W030000733	B16RX8 DUP 20030461	15092-94-1	Lead-212	SOIL	LA-508-462	. 14.	0.588	pCi/g	1.00	0.033	09/10/03 04/04/03 08/27/03
W030000733	B16RX8 DUP 20030461	E.T.C	Pb-212 Rel. Count Error (GEA)	SOIL	LA-508-462	P. 100 N.	+- 0.0588	pCi/g	1.00	0.0	09/10/03 04/04/03 08/27/03
W030000733	B16RX8 DUP 20030461	15067-28-4	Lead-214	SOIL	LA-508-462	T	0.533	pCi/g	1.00	0.033	09/10/03 04/04/03 08/27/03
W030000733	B16RX8 DUP 20030461	E.T.C	Pb-214 Rel. Count Error (GEA)	SOIL	LA-508-462	-	+ 0.0618	pCl/g	1.00	0.0	09/10/03 04/04/03 08/27/03
W030000733	B16RX8 DUP 20030461	13968-53-1	Ruthenium-103	SOIL	LA-508-462	U	4.00e-03	pCi/g	1.00	0.014	09/10/03 04/04/03 08/27/03
W030000733	B16RX8 DUP 20030461	E,T,C	Ru-103 Rel. Count Error (GEA)	SOIL	LA-508-462	11	+- 8.40e-03	pCi/g	1.00	0.0	09/10/03 04/04/03 08/27/03
W030000733	B16RX8 DUP 20030461	13966-06-8	Tin-113	SOIL	LA-508-462	U	-3.07e-03	pCi/g	1.00	0.019	09/10/03 04/04/03 08/27/03
W030000733	B(6RX8 DUP 20030461	E.T.C	Sn-113 Rel: Count Error (GEA)	SOIL	LA-508-462	:	+- 0.0115	pCi/g	1.00	0.0	09/10/03 04/04/03 08/27/03
W030000733	B16RX8 DUP 20030461	14913-50-9	Thailium-208	SOIL	LA-508-462		0.182	pCi/g	1.00	0.016	09/10/03 04/04/03 08/27/03
	B16RX8 DUP 20030461	E,T,C	TI-208 Rel. Count Error (GEA)	SOIL	LA-508-462	:	+- 0.0295	pCi/g	1.00	0.0	09/10/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	14596-10-2	Americium-241	SOIL	LA-508-462	U	0.895	oCi/g	1.00	0.24	09/08/03 04/04/03 08/27/03
W030000734	un etimen – in in medereretine i	E.T.C	Am-241 Rel Count Error (GEA)	SOIL	LA-508-462		+- 0.181	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27/03
W030000734		14234-35-6	Antimony-125	SOIL	LA-508-462	U	0.0132	pCi/g	1.00	0.039	09/08/03 04/04/03 08/27/03
W030000734	भाग सम्बद्धाः । अस्य द ्धाः 'स्वत्रस्य स्ट्रियं । य	E,T,C	Sb-125 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 0.0235	pCl/g	1.00	0.0	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	14762-78-8	Cerium-144	SOIL	LA-508-462	U	5.52e-03	pCl/g	1.00	0.16	09/08/03 04/04/03 08/27/03
	B16RX9 DUP 20030461	E.T.C	Ce-144 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 0.0552	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27/03
	B16RX9 DUP 20030461	10198-40-0	Cobalt-60	SOIL	LA-508-462	U	-4.55e-03	pCi/g	1.00	0.012	09/08/03 04/04/03 08/27/03
W030000734		E.T.C	Co-60 Rel, Count Error (GEA)	SOIL	LA-508-462		+- 7.10e-03	pCi/g	1.00	0,0	09/08/03 04/04/03 08/27/03
1717117171717171717171	B16RX9 DUP 20030461	13967-70-9	Cesium-134	SOIL	LA-508-462	U	0.0294	pCl/g	1.00	0.017	09/08/03 04/04/03 08/27/03
400000000000000000000000000000000000000	B16AX9 DUP 20030461	E.T.C	Cs-134 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 0.0141	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27/03
to an about the contraction	B16RX9 DUP 20030461	10045-97-3	Cesium-137	SOIL	LA-508-462	U	-5.93e-03	pCi/g	1.00	0.014	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	E,T,C	Cs-137 Rel. Count Error (GEA)	SO)L	LA-508-462		+- 8.66e-03	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27/03

MDL=Minimum Detection Limit RQ=Result Qualifier

U - Analyzed for but not detected above limiting criteria.

DF=Dilution Factor

• - Indicates results that have NOT been validated; . + - Indicates more than six qualifier symbols Report WGPP/ver. 1



Attention: Project:

Steve Trent F03-006: 200-PW-2/PW-4

Group #:

WSCF20031181

	-				WSCF						
Sample #	Client ID	CAS#	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	Analyze Sample Receive
W030000734	816RX9 DUP 20030461	14683-23-9	Europium-152	SOIL	LA-508-462	U	-0,0297	pCi/g	1,00	0.044	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	E,T,C	Eu-152 Ref. Count Error (GEA)	SOIL	LA-508-462	-1-4-1 1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	+- 0.0440	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	15585-10-1	Europium-154	\$OIL	LA-508-462	Ų	-4.51e-03	pČi/g	1.00	0.037	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	E,T,C	Eu-154 Rel. Count Error (GEA)	SOIL	LA-508-462	(A.S. DATASANANA	+ 0.0221	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	14391-16-3	Europium 155	SOIL	LA-508-462	U	0.0588	pCi/g	1.00	0.10	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	E,T,C	Eu-155 Rel. Count Error (GEA)	SOIL	LA-508-462	. 2-7 2-1	+- 0.0606	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	14681-63-1	Niobium-94	SOIL	LA-508-462	Ü	7.31e-03	pCi/g	1.00	0.014	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	E,T,C	Nb-94 Rel. Count Error (GEA)	SOIL	LA-508-462	46 T 1 (2828)8885	+- 7.97e-03	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	13982-63-3	Radium-226	SOIL	LA-508-462		0.372	pCi/g	1.00	0,028	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	E,T,C	Ra-226 Rel. Count Error (GEA)	SOIL	LA-508-462	i i i i i i i i i i	+- 0.0565	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	15262-20-1	Radium-228	SOIL	LA-508-462		0.515	pCl/g	1.00	0.043	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	E,T,C	Ra-228 Rel. Count Error (GEA)	SOIL	LA-508-462	Politicanio d	+- 0.0824	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	13967-48-1	Ruthenium-106	SOIL	LA-508-462	U	-0,0290	pCi/g	1.00	0.12	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	E,T,C	Ru-106 Rel. Count Error (GEA)	SOIL	LA-508-462	***	+- 0.0734	pCl/g	1.00	0.0	09/08/03 04/04/03 08/27/03
Dw030000734	B16RX9 DUP 20030461	15832-50-5	Tin-126	SOIL	LA-508-462	U	-0.0238	pCi/g	1.00	0.11	09/08/03 04/04/03 08/27/03
Dw030000734	B16RX9 DUP 20030461	E,T,C	Sn-126 Rel, Count Error (GEA)	SOIL	LA-508-462	1444 1444	+- 0.119	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27/03
Dw030000734	B16RX9 DUP 20030461	15065-10-8	Thorium-234	SOIL	LA-508-462		37.3	pCi/g	1.00	1.7	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	E,T,C	Th-234 Rel. Count Error (GEA)	SOIL	LA-508-462	1878 - A 1974	+- 4.33	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27/03
Dwo30000734	816RX9 DUP 20030461	15117-96-1	Uranium-235	SOIL	LA-508-462	14.1533	0.618	pCi/g	1.00	0.16	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	E,T,C	U-235 Rel, Count Error (GEA)	SOIL	LA-508-462	7] 1 7924	+- 0.139	pCi/a	1.00	0.0	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	13982-39-3	Zinc-65	SOIL	LA-508-462	ù	0,0132	pCi/g	1.00	0.029	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	E,T,C	Zn-65 Rel. Count Error (GEA)	SOIL	LA-508-462	1451±461±164.4:	+- 0.0191	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27/03
W030000734	B16RX9 DUP 20030461	14331-83-0	Actinium-228	SOIL	LA-508-462		0.515	pCi/g	1.00	0.043	09/08/03 04/04/03 08/27/03
		E,T,C	Ac-228 Rel. Count Error (GEA)	SOIL	LA-508-462	424 - 1 TOP4	+- 0.0824	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27/03
W030000734	and the transfer of the state o	14913-49-6	Bismuth-212	SOIL	LA-508-462		0.316	pCi/g	1.00	0.11	09/08/03 04/04/03 08/27/03
- 1991 - 20 Earle - 20 Feb	en travallarinako - trattariarin terrapatan 1901, oranda	660656766767	Bi-212 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 0.106	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27/03
W030000734	The second secon	14733-03-0	Bismuth-214	SOIL	LA-508-462	\mathcal{I}_{ϵ}	0.372	pCi/g	1.00	0.028	09/08/03 04/04/03 08/27/03

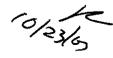
RQ=Result Qualifier

MDL=Minimum Detection Limit U - Analyzed for but not detected above limiting criteria.

DF=Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

Report WGPP/ver. I



Attention: Project:

Steve Trent

F03-006: 200-PW-2/PW-4

Group #:

WSCF20031181

					WSCF							
Sample #	Client ID	CAS#	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	Analyze Sample Rece	eive
W030000734	B16RX9 DUP 20030461	ET,C	Bi-214 Rel. Count Error (GEA)	SOIL	LA-508-462		÷- 0.0565	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27	7/03
W030000734	B16RX9 DUP 20030461	15092-94-1	Lead-212	SOIL	LA-508-462		0.558	pCi/g	1.00	0.031	09/08/03 04/04/03 08/27	7/03
W030000734	B16RX9 DUP 20030461	E,T,C	Pb-212 Rel, Count Error (GEA)	SOIL	LA-508-462		+- 0.0564	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27	7/03
W030000734	B16RX9 DUP 20030461	15067-28-4	Lead-214	SOIL	LA-508-462	7	0.426	pCi/g	1.00	0.032	09/08/03 04/04/03 08/27	7/03
W030000734	B16RX9 DUP 20030461	E,T,C	Pb-214 Rel. Count Error (GEA)	SOIL	LA-508-462	uda Yard	+- 0.0515	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27	7/03
W030000734	B16RX9 DUP 20030461	13968-53-1	Ruthenium-103	SOIL	LA-508-462	U	-1.62a-03	pCi/g	1.00	0.013	09/08/03 04/04/03 08/27	7/03
W030000734	B16RX9 DUP 20030461	E,T,C	Ru-103 Ref. Count Error (GEA)	SOIL	LA-508-462		+- 8,18e-03	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27	7/03
W030000734	B16RX9 DUP 20030461	13966-06-8	Tin-113	SOIL	LA-508-462	Ü	1.18e-03	pCi/g	1.00	0.018	09/08/03 04/04/03 08/27	7/03
W030000734	B16RX9 DUP 20030461	et.c	Sn-113 Ret. Count Error (GEA)	SOIL	LA-508-462		+- 0.0118	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27	7/03
W030000734	B16RX9 DUP 20030461	14913-50-9	Thallium-208	SOIL	LA-508-462	. ,	0.169	pCi/g	1.00	0.014	09/08/03 04/04/03 08/27	7/03
W030000734	B16RX9 DUP 20030461	E.T.C	Ti-208 Rel. Count Error (GEA)	SOIL	LA-508-462	11,41	+- 0.0265	pCi/g	1.00	0.0	09/08/03 04/04/03 08/27	7/03
W030000735	B16RYO DUP 20030470	14596-10-2	Americium-241	SOIL	LA-508-462	U	0.0543	pCl/g	1.00	0,18	09/08/03 04/07/03 08/27	7/03
W030000735	B16RYO DUP 20030470	E,T,C	Am-241 Rel Count Error (GEA)	SOIL	LA-508-462		+- 0.112	pCi/g	1.00	0,0	09/08/03 04/07/03 08/27	7/03
W030000735	B16RYO DUP 20030470	14234-35-6	Antimony-125	SOIL	LA-508-462	U	-4.34e-03	pCi/g	1.00	0.055	09/08/03 04/07/03 08/27	7/03
W030000735	B16RYO DUP 20030470	F,T,C	Sb-125 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 0.0333	pCi/g	1:00	0.0	09/08/03 04/07/03 08/27	7/03
W030000735	B16RYO DUP 20030470	14762-78-8	Cerium-144	SOIL	LA-508-462	U	0.0157	pCi/g	1.00	0.13	09/08/03 04/07/03 08/27	7/03
W030000735	B16RYO DUP 20030470	E,T,C	Ce-144 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 0.0801	pCi/g	1.00	0.0	09/08/03 04/07/03 08/27	7/03
W030000735	B16RYO DUP 20030470	10198-40-0	Cobalt-60	SOIL	LA-508-462	Ū	3.76e-03	pCi/g	1.00	0.028	09/08/03 04/07/03 08/27	7/03
W030000735	B16RYO DUP 20030470	E,T,C	Co-60 Ref. Count Error (GEA)	SOIL	LA-508-462		+- 0.0157	pCi/g	1.00	0.0	09/08/03 04/07/03 08/27	7/03
W030000735	B16RYO DUP 20030470	13967-70-9	Cesium-134	SOIL	LA-508-462	U	0.0498	pCi/g	1.00	0.031	09/08/03 04/07/03 08/27	7/03
_w030000735	B15RYO DUP 20030470	E.T.C	Cs-134 Ref. Count Error (GEA)	SOIL	LA-508-462	Sec. 1.	+- 0.0278	pCi/g	1.00	0.0	09/08/03 04/07/03 08/27	7/03
W030000735	B16RYO DUP 20030470	10045-97-3	Cesium-137	SOIL	LA-508-462	U	3.13e-04	pCi/g	1.00	0.025	09/08/03 04/07/03 08/27	7/03
∆ ₩030000735	B16RYO DUP 20030470	E,T,C	Cs-137 Ref. Count Error (GEA)	SOIL	LA-508-462		+- 3 13e-03	pCVg	1.00	0.0	09/08/03 04/07/03 08/27	7/03
W030000735	B16RYO DUP 20030470	14683-23-9	Europium-152	SOIL	LA-508-462	U	8.12e-03	pCi/g	1.00	0.055	09/08/03 04/07/03 08/27	7/03
W030000735	B16RYO DUP 20030470	E,T,C	Eu-152 Rel. Count Error (GEA)	SOIL	LA-508-462	11	+- 0,0548	pCl/g	1.00	0.0	09/08/03 04/07/03 08/27	7/03
W030000735	B16RYO DUP 20030470	15585-10-1	Europium-154	SOIL	LA-508-462	U	8.56e-03	pCi/g	1.00	0.083	09/08/03 04/07/03 08/27	7/03
W030000735	B16RYO DUP 20030470	E,T,C	Eu-154 Rel. Count Error (GEA)	SOIL	LA-508-462		+- 0.0489	pCi/g	1.00	0.0	09/08/03 04/07/03 08/27	7/03

MDL=Minimum Detection Limit

U - Analyzed for but not detected above limiting criteria.

RQ=Result Qualifier

DF=Dilution Factor

* - Indicates results that have NOT been validated;

+ - Indicates more than six qualifier symbols

Report WGPP/ver. 1



Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Sample Delivery Group	WSCF20030461
Sample Matrix	Soil
Sample Visual	Brown
SAF Number	F03-006
Data Deliverable	Summary Report

Introduction

Two (2) soil samples (B16RX8, B16RX9) from the GPP was received at the WSCF Laboratory on April 4, 2003. The sample was analyzed for those analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Groundwater Protection Program-Letter of Instruction*, referenced in the cover letter.

The narrative (Attachment 1) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 2) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information. Copies of the chain of custody and Request for Sample Analysis forms are included as Attachment 3.

Analytical Methodology for Requested Analyses

- ICP-MS Metals by EPA Method 200.8 and ICP-AES Metals by EPA SW-846 Method 6010A. Analytical work was performed with no deviations to the approved method.
- VOA's by EPA SW-846 Method 8260A. Analytical work was performed with no deviations to the approved method. The compound 1-Butanol requested under EPA SW-846 Method 8015 was reported under this method.
- Semi-VOA's by EPA SW-846 Method 8270B. Analytical work was performed with no deviations to the approved method.
- Alcohols and Glycols by EPA SW-846 Method 8015. Analytical work was performed
 with no deviations to the approved method. The compound 1-Butanol requested under
 this method was reported under EPA SW-846 Method 8260A.
- WTPH-D by WDOE Method NWTPH-Dx. Analytical work was performed with no deviations to the approved method.
- WTPH-G by WDOE Method NWTPH-Gx. Analytical work was performed with no deviations to the approved method.

- IC Anions and Ammonium by EPA SW-846 Method 300.0 and 300.7. Analytical work was performed with no deviations to the approved method for Ammonium, but a deviation was required for the Anions (see comments below).
- The pH by EPA Method 150.1. Analytical work was performed with no deviations to the approved method.
- Percent Solids by EPA Method 160.3. Analytical work was performed with no deviations to the approved method.
- Cyanide by EPA SW-846 Method 9010. Analytical work was performed with no deviations to the approved method.
- All RadChem analyses (TA/TB, AEA's, GEA) were run by internal WDOE accredited WSCF procedures. Analytical work was performed with no deviations to the approved method.

Comments

PCB's – This analysis was originally on the Sample Chain of Custody when received at the WSCF Laboratory, but the client later requested the analysis not be run.

ICP-MS and ICP-AES Metals – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-27, 2-28, 2-29, 2-30, and 2-48 for QC details.

VOA's – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-36, 2-37 and 2-38 for QC details. Compounds listed on the tentatively identified peak report with an "N" qualifier have been identified with the program used to interpret the raw data.

Semi-VOA's – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-44, 2-45, 2-46 and 2-47 for QC details. Compounds listed on the tentatively identified peak report with an "N" qualifier have been identified with the program used to interpret the raw data.

Alcohols and Glycols – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-37 for QC details.

WTPH-D – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-40 for details.

WTPH-G – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-39 for details.

IC Anions – The client requested hold time(s) for this analysis was not met. The client was notified and requested WSCF to continue with this analysis. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-33, 2-34 and 2-36 for QC details.

NH4 – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-38 for QC details.

The pH – Per the direction of the chain of custody, the pH was completed within 24 hours of sampling.

Percent Solids – PCB's, VOA's, Semi-VOA's, Alcohols and Glycols, WTPH-G and WTPH-D analytical results were corrected for percent solids. All other analytical results were reported for the sample as received.

CN – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-26 for QC details.

RadChem – There are no hold times associated with these WDOE accredited methods. Except for GEA, a Laboratory Control Sample and Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-31, 2-32, and 2-35 for QC details.

This Summary Report is in compliance with the SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the WSCF Laboratory Analytical Manager and Client Services, as verified by the following signature.

Troy Dale

WSCF Production Control

Abbreviations

Hg - mercury

IC - ion chromatography

ICP - inductively coupled plasma

ICP/AES - ICP/atomic emission spectroscopy

ICP/MS – ICP/mass spectrometry

Total U - total uranium

AT/TB - total alpha/total beta

AEA - Alpha Energy Analysis

WTPH-G - Total Hydrocarbons-Gasoline

Am - americium

Cm - curium

Pu – plutonium

Np - neptunium

GEA - gamma energy analysis

H3 - Tritium

Sr - Strontium 89, 90

WTPH-D - Total Hydrocarbons-Diesel

TSS - Total Suspended Solids

Customer Sample Number	Original Sample Delivery Group
B16RX6	WSCF20030459
B16RX7	WSCF20030460
B16RX8	WSCF20030461
B16RX9	WSCF20030461
B16RY0	WSCF20030470
B16RY1	WSCF20030470
B16RY2	WSCF20030470
B16RY3	WSCF20030492
B16RY4	WSCF20030515
B16RY5	WSCF20030524
B16VV9	WSCF20030524

Introduction

GPP requested WSCF correct exponent issues associated with Cesium-134 for B16RX6 (WSCF sample number W030000731) and Americium-241 for B16RX8 (WSCF sample number W030000733). The original report was issued on September 18, 2003 under letter number T4180-03-SLF-036). These issues have been corrected and are contained in the attached report.

The narrative (Attachment 1) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 2) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information.

Analytical Methodology for Requested Analyses

• The GEA analysis was run by internal WDOE accredited WSCF procedures. Analytical work was performed with no deviations to the approved method.

Comments

RadChem – There are no hold times associated with this WDOE accredited method. A Laboratory Control Sample, Blank and Duplicate (per agreement with the client, the duplicate is a recount of one the samples in the batch) were analyzed with this assigned delivery group. See page(s) 2-27, and 2-28 for QC details. The upper and lower limits for the BLANK (page 2-28) have been established as starting points for the GEA analysis. As more analyses are run, these limits will be adjusted.

This Summary Report is in compliance with the SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the WSCF Laboratory Analytical Manager and Client Services, as verified by the following signature.

Troy Dale

WSCF Production Control

AEA - Alpha Energy Analysis

Abbreviations

Hg – mercury
IC – ion chromatography
ICP – inductively coupled plasma
ICP/AES – ICP/atomic emission spectroscopy
ICP/MS – ICP/mass spectrometry
Total U – total uranium
AT/TB – total alpha/total beta

WTPH-G - Total Hydrocarbons-Gasoline

Am - americium
Cm - curium
Pu - plutonium
Np - neptunium
GEA - gamma energy analysis
H3 - Tritium
Sr - Strontium 89, 90
WTPH-D - Total Hydrocarbons-Diesel
TSS - Total Suspended Solids

		roject		CHA	IN OF CUST	'ODY/S	AMPL	E ANAL	YSIS	REQU	EST		F03-	006-014	Page 1	ot I
Collector Johansen/Pope/Pfisto	эг			npany (C Huist	Contact trom	Telephor 373-3				Project (TRENT,	Coordinator SJ	Price	Code	8N	Data Tu	
roject Designation 200-PW-2/200-PW-	OU - Boreh	ole Soil Sampling			Location 9 (C3245) 22.5-25.0	ft				SAF No. F03-006		Air Q	uality		30 1	Days
ce Chest No.	16-6	9.		d Logb	oook No. 3361		COA 1175041	ES10			of Shipment ament Vehicle	·				
Shipped To Waste Sampling & C	haracterizatio	on	on	site Pro	operty No.	NIK	7	_		Bill of L	ading/Air Bi	1 No. 1	y			
POSSIBLE SAMPLI	E HAZARDS	VREMARKS											,			
			% -		Preservation	Cool 4C	Cool 4C	None	No	λc					<u> </u>	
Special Handling a	nd/or Stora	ge		T	ype of Container	≖G	Gs*	P	Snap	Vial					<u> </u>	<u> </u>
	,			No	o. of Container(s)	1	3	1	1							
C					Volume	250mL	40mL	500 mL	60n	ıL .						
00028		SAMPLE ANAI	.YSIS			See item (1) in Special Instructions,	See item (2) Special Instruction	Special	Activity	Scan						
28	200	30461			·											
Sample No.		Matrix •	Sample Da	te	Sample Time		المجالية ا المجالية المجالية ا						建建设	保銀銀		10000
316RX8 W 530 27		SOIL	4.4.		1348	~	X	×	\sim						<u> </u>	
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<u>·</u> ·					 	·	 		-					 	<u> </u>	
					-		 	- 	 			_		 	 -	
CHAIN OF POS	SESSION		Sign/P	int Nat	mes	·	SP	ECIAL INSTI	RUCTION	ONS				<u> </u>	<u> </u>	Matrix *
tin qui shed By Removed	MINITINS	Date/Time 14	D Receiped By	iored in	KRC Î	te Time 63 149	·	The laboratory is	s to repor	t both kerose		•			•	S=Soit SE=Soitment
clinquished By/Removed	From	Date/Time	Received By/			tc/Time	Tř.) Semi-VOA - 82 PH-Diesel Range -) Alcohols, Glyco	WTPH-	D; TPH-Gas	oline Range - W	TPH-G; P	CBs - 308	2	•	SO+Solid SI+Sludge W = Water
clinquished By/Removed	From	Date/Time	Received By/	tored In	Da	te/Time	(3) Ga) Gamma Spectro amma Spec - Add (8); Isotopic Pluto	scopy {(on {Ant	Cesium-137, imony-125, (Cobalt-60, Euro Jesium-134, Tin	piun-152, -126}, Isot	Europium topic Radii	-154, Europiu um (Radium-	m-155}; 226, Radium-	O=Oil A=Air DS=Drum Soli DL=Drum Liq
linquished By/Removed	From	Date/Time	Received By/	stored in	. Da	te/Time	(C Ni	omplete) (Antimo ckel, Selenium, S Inloride, Fluoride,	ony, Arse ilver, Un	nic, Barium, inium); ICP	Beryllium, Cad Metals - 6010A	mium, Chro (Add-on)	omium, Co {Bismuth,	opper, Lead, N Boron); IC A	tercury, nions - 300.0	T=Tisse; W!=Wipc L=Liquid
linquished By/Removed i	Froin	Date/Time	Received By/S	itored In	Da	te/Time		5.2; Cations (IC)						cy, cyanioc (· ((41) *	V=Vegetation X=Other
linguished By/Removed i	From	Date/Time	· Received By/	tored in	Da	ic/Time		-								
ABORATORY Re	ceived By				<u> </u>	Ti	tle					···			Date/Time	
INAL SAMPLE DI	sposal Method							Dispo	sed By			- , , <u>-</u> -			Date/Time	

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	В	(c)	D	E
PROJECT: 200	2-DW-2/200-	PW-4	DATA PACKAG	E: WSCFZ00	1040c
VALIDATOR:	+4	LAB:		DATE: OIS	
CASE:			SDG: 304		
		ANALYSES	PERFORMED		,
Gross Alpha/Beta	Strontjum-90	Technicism-99	Alpha Spectroscopy	Gararra Spactroscopy	
Total Uranism	Radium-22	Tritium			
SAMPLES/MATI	RIX				
BILRY	18 BI	LRX5			
<u> </u>					
					
				·	
		····	·		Soil
1. Completenes	s	•	*******************		D.N/A
Technical verific	cation forms pre	sent?	****************		Yes No N/
Comments:			· ·		·
				********************************	· · · · · · · · · · · · · · · · · · ·
				····	
2. Initial Calibra	ation (I evels D	E)			D.N/A
					\sim
Instruments/dete	ectors calibrated	?	*******	************	Yes No'N/A
Initial calibration	n acceptable?		•••••	*************************	Yes No N/A
Standards NIST	traceable?			******************	Yes No N/A
Data Validation Pro	ocedure for Radioc	hemical Analysis	000 30		·

Standards Expired?	Yes No N/A
Calculation check acceptable?	Yes No N/A
Comments:	
3. Continuing Calibration (Levels D, E)	- FRA
Calibration checked within required frequency?	\
Calibration check acceptable?	
Calibration check standards traceable?	
Calibration check standards expired?	Yes No N/A
Calculation check acceptable?	Yes No N/A
Comments:	
	·
4. Background Counts (Levels D, E)	B N/A
Background Counts checked within required frequency?	Yes No N/A
Background Counts acceptable?	Yes No N/A
Calculation check acceptable?	
Comments:	
	·
	

000031

5. Blanks (Levels B, C, D, E)	🗆 n/a
Method blank analyzed within required frequency? Method blank results acceptable? Analytes detected in method blank? Field blank(s) analyzed? Field blank results acceptable? Analytes detected in field blank(s)? Transcription/Calculation Errors? (Levels D, E) Comments: Bismid-214 Ra-224 Ra-224 Lead 214- T Ra-2	Yes No N/A
	No FB
6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) 🗆 N/A
LCS /BSS analyzed within required frequency?	Ves No N/A
LCS/BSS recoveries acceptable?	
LCS/BSS traceable? (Levels D,E)	
LCS/BSS expired? (Levels D,E)	2
LCS/BSS levels correct? (Levels D,E)	
Transcription/Calculation Errors? (Levels D, E)	
Comments:	
7. Chemical Carrier Recovery (Levels C, D, E)	N/A
Chemical carrier added?	Yes No N/A
Chemical recovery acceptable?	Yes No N/A
Chemical carrier traceable? (Levels D, E)	Yes No N/A

Chemical carrier expired? (Levels D, E)	Yes No N/A
Transcription/Calculation errors? (Levels D, E)	
Comments:	
8. Tracer Recovery (Levels C, D, E)	D N/A
Tracer added?	(Yes) No N/A
Tracer recovery acceptable?	(Yes) No N/A
Tracer traceable? (Levels D, E)	Z1 \11
Tracer expired? (Levels D, E)	∀ X:
Transcription/Calculation errors? (Levels D, E)	
Comments:	.
9. Matrix Spikes (Levels C, D, E)	- Traca
Matrix spike analyzed?	Yes No N/A
Spike recoveries acceptable?	•
Spike source traceable? (Levels D, E)	
Spike source expired? Levels D, E)	
Transcription/Calculation Errors? (Levels D, E)	
Comments:	
	- · - · ·

10. Duplicates (Levels C, D, E)	□ N/A
Duplicates Analyzed at required frequency?	Ves No N/A
RPD Values Acceptable?	
Transcription/Calculation Errors? (Levels D, E)	Yes No N/A
Comments:	
11. Field QC Samples (Levels C, D E)	
Field duplicate sample(s) analyzed?	Yes No N/A
Field duplicate RPD values acceptable?	Yes No N/A
Field split sample(s) analyzed?	
Field split RPD values acceptable?	
Performance audit sample(s) analyzed?	
Performance audit sample results acceptable?	
Comments:	The second secon
12. Holding Times (All levels)	
Are sample holding times acceptable?	Yes No N/A
Comments:	
	· · · · · · · · · · · · · · · · · · ·

13. Results and Detection Limits (All Levels)	🗆 N/A
Results reported for all required sample analyses?	
Results supported in raw data?(Levels D, E)	Yes No N/A
Results supported in raw data?(Levels D, E)	Yes No NA
Transcription/Calculation errors? (Levels D, E)	Yes No 🕡
MDA's meet required detection limits?	Yes No N/A
MDA's meet required detection limits?	Yes No (N/A)
Comments:	
	·

Appendix 6

Additional Documentation Requested by Client

SDG Number: WSCF20030461

Matrix: SOLID

Test: Americium by AEA

SAF Number: F03-006

Sample Date: 04/04/03 Receive Date: 04/04/03

QC Type

Analyte

CAS#

Results

Units

Analysis Date

Lower Limit

Upper Limit

Lab ID: W030000159

BATCH QC ASSOCIATED WITH SAMPLE

DUP Am-241 by AEA

BATCH QC

BLANK Am-241 by AEA LCS Am-241 by AEA 14596-10-2

-3.46-02

PCG % Recov 04/18/03

04/18/03

0.000

1000.000

Report w13q/rev.5.1 p 30-may-2003 13:21:29

SDG Number: WSCF20030461

Matrix: SOLID

Test: Plutonium Isotopics by AEA

SAF Number: F03-006

Sample Date: Receive Date:

04/04/03 04/04/03

QC

Type Analyte CAS#

Results

Units Date

Analysis Lower Limit

Upper Limit

Lab ID:

W030000159

BATCH QC ASSOCIATED WITH SAMPLE

DUP Pu-239/240 by AEA

04/17/03

BATCH QC

BLANK Pu-239/240 by AEA LCS Pu-239/240 by AEA PU-239/240 PU-239/240

108,000

04/17/03 PCG % Recov 04/17/03

0.000 75.000 1000.000 125.000

Report w13q/rev.5.1 p 30-may-2003 13:21:29

SDG Number: WSCF20030461

Matrix: SOLID

Test: Uranium Isotopics by AEA

SAF Number: F03-006 Sample Date: 04/04/03

Sample Date: 04/04/03 Receive Date: 04/04/03

_QC

Type Analyte

CAS#

Results

Units

Analysis Date Lower Limit Upper Limit

Lab ID:

W030000157

BATCH QC ASSOCIATED WITH SAMPLE

U-288 by AEA

24678-82-8

8.163

0 04/28/03

0.000

20.000

Lab ID:

W030000159

BATCH QC ASSOCIATED WITH SAMPLE

DUP U-238 by AEA

24678-82-8

11,321

RPD (

14/28/03

0.000

20.000

BATCH QC

BLANK U-23 LCS U-23

U-238 by AEA U-238 by AEA 24678-82-8 24678-82-8 1.6e-02 1.13.000

02 PCG IOO % Reco

PCG 04/28/03 % Recov 04/28/03 0,000 75.000 1000,000 125,000

SDG Number: WSCF20031181

Matrix: SOLID
Test: Gamma Energy Analysis-grd H2O

SAF Number: F03-006

Sample Date: Receive Date:

QC Type	Analyte	CAS#	QC Found	QC Yield	Units	Analysis	Lower Limit	Upper Limit	DO.
BATC		CAS#	QC Found	QC Heid	Units	Date	Finit	Limit	RQ
BLANK	Actinium-228	14331-83-0	4.48e-02	0.045	pCi/g	09/08/03	-10000,000	1000.000	
BLANK	Americium-241	14596-10-2	U-6.86e-2.	n/a	pCl/g	09/08/03	-10000,000	1000.000	
BLANK	Bismuth-212	14913-49-6	U9.23e-03	n/a	pCi/g	09/08/03	-10000.000	1000.000	44 - 1 - 11 H. Dart Fr. (1889-8) 1/1880-8:11 1
BLANK	Bismuth-214	14733-03-0	1.07e-01	0.107	pCi/g	09/08/03	-10000.000	1000.000	
BLANK	Cerium-144	14762-78-8	U-3.17e-2	n/a	pCi/g	09/08/03	-10000.000	1000.000	A DESCRIPTION OF THE PROPERTY
BLANK	Cobalt-60	10198-40-0	U2:58e-03	n/a	pCi/g	09/08/03	-10000.000	1000.000	
BLANK	Cesium-134	13967-70-9	U1.17e-03	n/a	pCi/g	09/08/03	-10000.000	1000.000	
BLANK	Cesium:137	10045-97-3	U-8,55e-3	n/a	pCi/g	09/08/03	-10000,000	1000.000	4. 医二角形容裂类螺瓣形式
BLANK	Europium-152	14683-23-9	U3.28e-03	n/a	pCi/g	09/08/03	-10000.000	1000.000	the state of the s
BLANK BLANK	Europium-154 Europium-155	15585-10-1 14391-16-3	U-2.86e-2	n/a	pCi/g	09/08/03	-10000,000	1000.000	
BLANK	Niobium-94	14681-63-1	U7.27e-03 U1.44e-D3	n/a	ρCi/g ρCi/g	09/08/03 09/08/03	-10000.000 -10000.000	1000.000	
BLANK	Lead-212	15092-94-7	U1.10e-02	n/a n/a	pCi/g	09/08/03	-10000,000	1000.000	
BLANK	Lead-214	15067-28-4	9.206-02	0.092	pCi/g	09/08/03	+10000.000	1000.000	
BLANK	Redium-226	13982-63-3	1.07e-01	0.107	pCi/g	09/08/03	-10000.000	1000.000	
BLANK	Radium-228	15262-20-1	4.48e-02	0.045	pCi/g	09/08/03	10000.000	1000.000	
BLANK	Ruthenium-103	13968-53-1	U-5.20e-4	n/a	pCi/g	09/08/03	-10000.000	1000.000	•
BLANK	Ruthenium-106	13967-48-1	U-1.97e-2	n/a	pCi/g	09/08/03	-10000,000	1000,000	
BLANK	Antimony-125	14234-35-6	U-9.06e-3	n/a	pCi/g	09/08/03	-10000.000	1000.000	
BLANK	Tin-113:	13966-06-8	U-7.66e-3	n/a	pCi/g	09/08/03	-10000.000	1000,000	
BLANK	Tin-126	15832-50-5	U9.17e-04	n/a	pCi/g	09/08/03	-10000.000	1000.000	
BLANK	Therlum-234 Thallium-208	15065-10-8	U1.42e-01	n/a	pCi/g	09/08/03	-10000,000	1000.000	
BLANK BLANK	Uranium-235	14913-50-9 15117-98-1	U-4.37e-3 U-1.68e-2	n/a >0, 21 -1⊒42862	pCi/g	09/08/03	-10000.000	1000.000	esterning of the property forces.
BLANK	Zinc-65	13982-39-3	U2.23e-03	π <i>l</i> a n/a	pCi/g pCi/g	09/08/03 09/08/03	-10000.000 -10000.000	1000.000	
LCS	Americium-241	14596-10-2	4,16e+03	106.122	% Recov	09/04/03	80.000	120.000	uktiku u titkik majit k
LCS	Cobalt-60	10198-40-0	4.43e+03	105.728	% Recov	09/04/03	80.000	120.000	
LCS	Casium 137	10045-97-3	3.88e+03	108.380	% Recov	09/04/03	80.000	120,000	

SDG Number: WSCF20031181 Matrix: SOLID Test: Gamma Energy Analysis-grd H2O

SAF Number: F03-006

Sample Date: Receive Date:08/27/03

	QQ	2						Analysis	Lower	Upper		
	Тур		Analyte	CAS #	QC Four	d QC Yield	Units	Date	Limit	Limit	RQ	
												
	T -1-	ID.	777020000741						·			
		ID:		TED WITH SAMI	ot 12							
	DUP	СП	Actinium-228	16D WITH SAME 14331-8		10 (A) (A) 14 (A) 14 (A) 14 (A)	vers v alaboro s i is	na konggang gala akka kak		2011 11 12 20 20 20	(ne. 2011);	1980/88081- W
• • •	DUP		Actinum-226	14596-1	207 BV - 0.2002 WKC 5 - M - 1007	11.160 n/a	RPD RPD	09/08/03 09/08/03	0.000	20.000		
	DUP	· ×	Bismuth-212	14913-4		29.318	RPD	09/08/03	0.000	20.000	4. Table 1. S. 15. 15.	. ASSECTED
	DUP		Bismuth-214	14733-0		2.890	RPD	09/08/03	0.000	20.000		1,000000,3000,300
5	DUP	- : .	Cerium-144	14762-7		n/a	RPD (09/08/03	0.000	20.000	, en para la companya de la company	. 7 (T. W.)
	DUP		Cobalt-60	10198-4	0-0 U4.28e-03	n/a	RPD	09/08/03	0.000	20.000	. 100 of 1000 ft - M. 1	Table Areas
٠٠.	DUP	٠.:	Cesium-134	13967-7	0.9 U1.73e-02	n/a	RPD	09/08/03	0,000	20,000		
	DUP		Cesium-137	10045-9	7-3 4.118-02	21.265	RPD	09/08/03	0.000	20.000	•	
	DUP	٠.	Europium-152	14683-2	N 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	n/a	RPD 🤼	09/08/03	0.000	20.000		
	DUP		Europium-154	15585-10		n/a	RPD	09/08/03	0.000	20.000		
000	DUP		Europium-155	14391-1	***	n/a	RPD	09/08/03	0.000	20.000		
Ŏ	DUP		Niobium-94	14681-6		n/a	RPD	09/08/03	0.000	20.000		
041	DUP	.*	Lead-212	15092-9	Company St	7.859	RPD	09/08/03	0.000	20,000		สมาร์สิร์ม 🐪
Ď	DUP		Lead-214	15067-2		7.111	RPD	09/08/03	0.000	20.000		i
	DUP		Radium-226	13982-6		2.890	RPD	09/08/03	0.000	20.000		40 A
	DUP		Radium-228	15262-20	VA. A	11.160	RPD	09/08/03	0.000	20.000	ing and the second seco	551 2 6 0
-	DUP	2.2	Rutherium 103	13968-5: 13967-4:	M MARKE POLINICA CA	n/a*	RPD*	09/08/03	0.000	20,000		#6.8. III
	DUP		Ruthenium-106	13967-48		n/a 	RPD RPD	09/08/03	0.000	20.000	10 000 0000000 1 1 1 1 1 1 1 1 1 1 1 1	
	DUP		Antimony-125 Tin-113	- 00000000 N. 25670000000000000	08 8 M	n/a		09/08/03	0,000	20.000		
	DUP	and the	Tin-126	13966-06 15832-50	LONG COMPLETE CONTRACTOR CONTRACTOR	n/a 	RPD RPD	09/08/03	0.000	20.000	n el serverangeline et negel g	Maked Company
100	DUP		Thorium-234	15065-1	Feb. 1, 4486 (1983) 1 (2019) 500 50 50 50 50 50 50 50 50 50 50 50 50	n/a	RPD	09/08/03	0.000	20.000		· 1000 1000 1000 1000 1000 1000 1000 10
743	DUP	1.24	Thallium-208	14913-50		n/a 6,289	RPD	5.500000000 5 1 100		20.000	e de la comitación de l	
	DUP	134	Uranium-235	15117-96		len i na unakkawanii ele	RPD	09/08/03 09/08/03	0.000	20.000		APPEND However
\$50 F	DUP	194,388	Zinc-65	13982-3		n/a	RPD	09/08/03	0.000	20.000		
######################################		990004	Willy MA	10502.5	ru V.,018-U2	n/a	****	usivarus	· · · · · · · · · · · · · · · · · · ·	20.000		

Date:

17 November 2003

To:

Fluor Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

200-PW-2/200-PW-4 OU - Borehole Soil Sampling

Subject: Wet Chemistry - Data Package No. WSCF20030461 (SDG No. 30461)

INTRODUCTION

This memo presents the results of data validation on Data Package No. 30461 prepared by WSCF. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample	Media	Validation	Analysis
B16RX8	4/4/03	Soil	С	See note 1 & 2
B16RX9	4/4/03	Soil	С	See note 1 & 2

- 1 Ammonia 350.3; pH 9040A; IC anions 300.0; cyanide 9010B.
- 2 Phosphate, nitrate and nitrite were not validated per FHI request...

Data validation was conducted in accordance with the FHI validation statement of work and the 200-PW-2 Uranium-Rich Process Waste Group Operable Unit RI/FS Work Plan and RCRA TSD Unit Sampling Plan (DOE/RL-2000-60, Rev. 1, December 2000). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times/Sample Preservation

Analytical holding times are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for ammonia, chloride, fluoride and sulfate; 14 days for cyanide; 2 days for phosphate; and immediate (24 hours) for pH.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

Due to the holding time being exceeded by greater than twice the limit, all pH results were qualified as estimates and flagged "J".

Due to the samples not being properly preserved (cooled to 4°.C), the cyanide and ammonia results were qualified as estimates and flagged "J".

All other holding times were acceptable.

Method Blanks

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field (Equipment) Blank

No equipment blanks were submitted for analysis.

Accuracy

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike and LCS recoveries must fall within the range of 75% to 125%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 74% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 125% or less than 75% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 125% and a sample result less than the IDL, no qualification is required.

Due to a matrix spike recovery of 31.2% and a matrix spike duplicate recovery of 21.9%, the ammonia result was qualified as an estimate and flagged "J".

Due to a matrix spike recovery of 127%, all fluoride results were qualified as estimates and flagged "J".

All other matrix spike and LCS recovery results were acceptable.

Precision

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 35%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

Due to an RPD outside QC limits (38%), all ammonia results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (69%), all fluoride results were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the target quantitation limits (TQLs) to ensure that laboratory detection levels meet the required criteria. All results met the TQL.

Completeness

Data package No. 30461 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to the holding time being exceeded by greater than twice the limit, all pH results were qualified as estimates and flagged "J". Due to the samples not being properly preserved (cooled to 4° F), the cyanide and ammonia results were qualified as estimates and flagged "J". Due to a matrix spike recovery of 127%, all fluoride results were qualified as estimates and flagged "J". Due to a matrix spike recovery of 31.2% and a matrix spike duplicate recovery of 21.9%, the ammonia result was qualified as an estimate and flagged "J". Due to an RPD outside QC limits (38%), all ammonia results were qualified as estimates and flagged "J". Due to an RPD outside QC limits (69%), all fluoride results were qualified as estimates and flagged "J". Data flagged "J" is an estimate, but under the FHI validation SOW, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

FHI, Contract #20266, Validation Statement of Work, Fluor Hanford Incorporated, July 7, 2003.

DOE/RL-2000-60, Rev. 1, 200-PW-2 Uranium-Rich Process Waste Group Operable Unit RI/FS Work Plan and RCRA TSD Unit Sampling Plan, December 2000.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with FHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: 30461	REVIEWER: TLI	DATE: 11/17/03	PAGE 1_OF_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Ammonia Fluoride	J	All	RPD
Ammonia Fluoride	J	All	MS/MSD recovery
рН	J	All	Holding tme
Cyanide Ammonia	J	Ali	Sample preservation

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: FLUOR-HANFO	ORD] .					
Laboratory: WSCF									
Case SDG:		WSCF20030461							
Sample Number		B16RX8		B16RX9					
11									
Location									
Sample Date		4/4/03		4/4/03					
Wet Chemistry	TQL	Result	Q	Result	q	Result	Q	Result	q
Ammonia	0.5			6.79	_				
Cyanide	0.5	<0.200	UJ	<0.200	ŲΊ				
pH**		9.60	_	9.59	_	<u></u>			
Bromide		<0.900	U	<0.855	U	ļ <u></u>			
Chloride	2	20.7		19.4					
Fluoride	_5	0.981	J_	1.03					
Nitrate*	2.5	447		415					
Nitrite*	2.5		<u> </u>	0.406		ļ			
Phosphate*	5	4.33		5.04					
Sulfate	5	118	<u> </u>	114		<u> </u>			
								1	
			<u> </u>			<u></u>			
				<u> </u>	L			<u> </u>	
			<u> </u>			<u> </u>		<u> </u>	Щ.
* - Not validated per FHI	request		<u> </u>	<u> </u>		ļ	4	<u> </u>	_
** - units are pH units			<u> </u>			<u> </u>		<u> </u>	—
*** ** * * *			<u> </u>				+	 	
NA = Not analyzed			ļ. —				_	├	.

WSCF ANALYTICAL RESULTS REPORT

Attention: Project:

Steve Trent F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

**	oject.	1.05-00	JO. 200-1 W	-LIX 11 -7		WSCF					•			
Sample #	Client ID	<u> </u>	CAS#	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
-W030000159	B16RX8	GPP	7664-41-7	Ammonia (N) by IC	SOLID	LA-503-401		6.22 🚺	ug/g	50,00	0,20	04/23/03	04/04/03	04/04/03
- W030000159	B16RX8	GPP	57-12-5	Cyanide by Midi/Spectrophotom	SOLID	LA-695-402	U	< 0.200 J	mg/kg	0.98	0.20	04/15/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	TS	Percent Solids	\$OLID	LA-619-412		94.1	%		0.0	04/22/03	04/04/03	04/04/03
- W030000159	B16RX8	GPP	PH	pH Soil and Waste Measurement	SOLID	LA-212-411	****	9.60 🛣	рН	Jean of Sent Benefit	0.010	04/22/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	12587-46-1	Alpha by liquid scintillation	SOLID	LA-508-421		12.0	pCi/g		17	04/09/03	04/04/03	04/04/03
W030000159	B16RX8	GPP		Alpha error by LC	SOLID	LA-508-421	,	41.0	%		0.0	04/09/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	12587-47-2	Beta by liquid scintillation	SOLID	EA-508-421		35.0	pCi/g		3.1	04/09/03	04/04/03	04/04/03
W030000159	B16RX8	GPP		Beta error by LC	SOLID	LA-508-421		30.0	%		0.0	04/09/03	04/04/03	04/04/03
W030000159	indahigan me	GPP	540-51-2	2-Bromosthanol	SOLID	Organics		1.40e+04	ug/kg		5.0e+03	05/02/03	04/04/03	04/04/03
W030000159		GPP	60-29-7	Diethyl ether	SOLID	Organics	U	< 5.00e+03	ug/kg		5.0e+03	05/02/03		and a second
W030000159		GPP	107-21-1	Ethylene glycol	SOLID	Organics	ប	< 5,00e+03	ug/kg		5:0s +03	05/02/03		HEREIGHER
W030000159		GPP	67-56-1	Methanol	SOLID	Organics	U.	< 1.00++03	ug/kg		1.0a+03	05/02/03		
W630000159		GPP .	14596-10-2	Am-241 by AEA	SOLID	LA-508-471	u	0.176	pCi/g		0.26	04/18/03		1919191919191919
W030000159		GPP deletioner and december of the	E,T,C	Am-241 by AEA Total Cntg Error	SOLID	LA-508-471	otato produktatata	98.0	% 	145+5+1+1+1+1+1+1+1+1+1+1+1	0.0	04/18/03		
W030000159		GPP	::4::124::4:4:4:4:4:4:4:4:4:4:4:4:4:4:4:	Bromide (Br) by IC	SOLID	EA-533-410	ט	< 0.900	ug/g	20,00	0.90	04/09/03		11111111111111111
W030000159	and the same of the same of	GPP GPP	16887-00-6	Chloride (Cl) by IC	SOLID	LA-533-410	erana erekterek	20.7 atdoordatasada as	ug/g	20.00	0.28 	04/09/03		
Para Parararan and Adria (1971)		GPP	16984-48-8 NO3-N	Fluoride (F) by IC	SOLID	LA-533-410	вх	0.981]	ug/g	20.00	0 14	04/09/03		48484884844
W030000159		GPP	. No francia dia mangang nangang pagagang ang	Nitrate (N) by IC	SOLID	LA-533-410		447 salaha <u>da da ta</u>	ug/g	9.89a+00		04/09/03	فرخرم وفرجر مراجر	and the second second
#F####################################		GPP	14265-44-2	Phosphate (P) by IC	SOLID	LA-533-410 LA-533-410		0.451	ug/g ug/g	20.00	D.18 0.26	04/09/03	11124144441111111	9090409090909090
W030000159	atatatatatatatatatatata	GPP	e interference terranic construction and a	Sulfate (SO4) by IC	SOLID	LA-533-410	B Markatata		05/2	20.00	0.48	04/09/03		*****
W030000159		GPP		Ac-228 Rel.% Count Error (GEA)	SOLID	LA-508-462		16.8	% %	2000	0.0	04/08/03		\$\$\$\$\$\$\$\$\$\$\$\$
_W030000159		GPP		Ac-228 by GEA	SOLID	LA-508-462		0.460	79 pCi/g		0.036	04/08/03 D4/08/03		******
W030000159		TI.	#F#F##################################	Am-241 Rei.% Count Error (GEA)	SOLID	LA-508-462		23.4	рС/у %		0.0	04/08/03		
W030000159	and the second section of	GPP		Am-241 by GEA	SOLID	LA-508-462		23. 4 0.726	л pCi/g	Cambonia d	0.22	atana arang arang arang arang	er e	04/04/03
W030000159		CPP	(461) (41) (51) (51) (42) (43) (43)	BI-212 Rel.% Count Error (GEA)	SOLID	LA-508-462		33.6	% %		0.0			04/04/03
W030000159		GPP		Bi-212 by GEA	SOLID	LA-508-462		0.270	л pCi/g		0.092	arana i akaina ara	برديم أأيعي وأياموني	04/04/03
									HOWN					

MDL=Minimum Detection Limit RQ=Result Qualifier

8 - The analyte < the RDL but > = the IDL/MDL (inorganic)

J - Estimated Value

X - Other flags and notes described in the comments/narrative.

E - Analyte is an estimate, has potentially larger errors

U - Analyzed for but not detected above limiting criteria.

DF=Dilution Factor

* - Indicates results that have NOT been validated;

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Ground Water Protection Program

+ - Indicates more than six qualifier symbols



WSCF ANALYTICAL RESULTS REPORT

Attention: Project:

Steve Trent F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

					WSCF								
Sample #	Client ID	CAS#	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
W030000159	B16RX8 GPP	126-73-8	Tri-n-butylphosphate	SOLID	LA-523-456	J.	94.0	ug/kg	1,00	7)	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	111-44-4	bis(-2-Chloroethyl)Eth	SOLID	LA-523-456	U	< 260	ug/kg	1.00	2.6e+02	04/18/03	04/04/03	04/04/03
W030000159	BIGRXB GPP	111-91-1	bis(2-Chloroethoxy)methane	SOLID	LA-523-456	U	< 120	ug/kg	1 00	1.2s+02	04/18/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	13966-29-5	U-234 by AEA	SOLID	LA-508-471		3.60	pCi/g		0.099	04/28/03	04/04/03	04/04/03
W030000158	B16RXB GPP	ET.C	U-234 by AEA Total Cntg Error	SOLID	LA-508-471		22.0	*		6.0	04/28/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	15117-96-1	U-235 by AEA	SOLID	LA-508-471		0.420	pCi/g		0.093	04/28/03	04/04/03	04/04/03
W030000189	BIGRXB GPP	E,T,C	U-235 by AEA Total Cotg Error	SOLID	LA-508-471		38.0	%		Ö. O	04/28/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	24678-82-8	U-238 by AEA	SOLID	LA-508-471		28.0	pCl/g		0.067	04/28/03	04/04/03	04/04/03
W030000159	B16RX8 GPP	ET,C	U-238 by AEA Total Cntg Error	SOLID	LA-508-471		19,0	%		0.10	04/28/03	04/04/03	04/04/03
W030000159	And the second of the second o	75-35-4	1,1-Dichloroethene	SOLID	LA-523-455	U	< 2.10	ug/kg	1.00	2.1	04/16/03	04/04/03	04/04/03
W030000159	: \$450 } \$400 } (460 \$ 460 \$ 470 \$ 50 \$ 60 \$ 60 \$ 60 \$ 60 \$ 60 \$ 60 \$ 6	71-36-3	1-Butanol	SOLID	LA-523-455	U	< 21.0	ug/kg	1.00	21	04/16/03	04/04/03	04/04/03
W030000159		71-43-2	Benzene	SOLID	LA-523-455	U	< 2.10	ug/kg	1.00	2.1	04/16/03	04/04/03	04/04/03
W030000159	\$P\$P\$P\$P\$P\$P\$P\$P\$P\$P\$P\$P\$P\$P\$P\$P\$P\$P\$P	108-90-7	Chlorobenzene	SOLID	LA-523 -4 55	Ų	< 2,10	ug/kg	1.00	2.1	04/16/03	04/04/03	04/04/03
W030000159		108-88-3	Toluene	SOLID	LA-523-455	U	< 2,10	ug/kg	1.00	2.1	04/16/03	04/04/03	04/04/03
W030000159		79-01÷6	Trichloroethene	SOLID	LA-523-455	บ	< 2.10	ug/kg	1.00	2.1	04/16/03	04/04/03	04/04/03
W030000159		8008-20-6	Kerosene	SOLID	NWTPH	U	< 4.206+03	ug/kg	1.00	4.20+03	05/01/03	04/04/03	04/04/03
W030000159	(TERRE PROPERTY OF THE PROPERT	68476-34-6	Total Pet. Hydrocarbons Diesel	SOLID	NWTPH	Ų	7.804+03	ug/kg	1.00	4.2e ± 03	05/01/03	04/04/03	04/04/03
W030000159	The state of the s	84-15-1	ortho-Terphenyl	SOLID	NWTPH		2.00e+04	ug/kg	1.00	2.1e+02	05/01/03	04/04/03	04/04/03
W030000160	18484978999999998898888988898989899999999	7664-41-7	Ammonia (N) by IC	soud	LA-503-401	3	6.79	ug/g	50.00	0.20	04/23/03	04/04/03	04/04/03
	816RX9 GPP	57-12-5	Cyanide by Midi/Spectrophotom	SOLID	LA-695-402	UI		mg/kg	0.99	0.20	04/15/03	04/04/03	04/04/03
	B16RX9 GPP	TS	Percent Solids	SOLID	LA-519-412		94,1	*		0.0	04/22/03	04/04/03	04/04/03
A transfer of the second second	B16RX9 GPP	PH	pH Soil and Waste Measurement	SOLID	LA-212-411	\mathcal{L}	. 9.59	pH	•.•	0.010	04/22/03	04/04/03	04/04/03
W030000160	ig nig ne negret er er er er en en en en er er graf grænerenet er	12587-46-1	Alpha by liquid scintiliation	SOLID	LA-508-421		12.0	p¢Vg		1.8			04/04/03
W030000160		Han kaan <u>aan dan</u> sahirika	Alpha error by LC	SOLID	LA-508-421	o oko ovevekskovskeve	50.0	%		0,0	******		04/04/03
W030000160		12587-47-2	Beta by liquid scintiliation	SOLID	LA-508-421		35,0	pCi/g		3.4	ekt in hindelik		04/04/03
W030000160	Contraction and the Contraction of the Contraction		Beta error by LC	SOLID	LA-508-421	det tetetereter se	31,0	% Stateteteratutet	tetetetet teteto or	0,0	avavreni riaer eterere:		04/04/03
MO30000180	B16RX9 GPP	540-51-2	2-Bremosthanol	SOLID	Organics		1,300+04	49/kg		5.0s+03	05/02/03	04/04/03	04/04/03

MDL=Minimum Detection Limit RQ=Result Qualifier

B - The analyte < the RDL but > = the IDL/MOL (inorganic)

J - Estimated Value

X - Other flags and notes described in the comments/narrative.

DF=Dilution Factor

* - Indicates results that have NOT been validated;

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Ground Water Protection Program

E - Analyte is an estimate, has potentially larger errors

U - Analyzed for but not detected above limiting criteria.



WSCF ANALYTICAL RESULTS REPORT

Attention: Project:

Steve Trent F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

. ~-	oject.	105-000. 200-1 1	7 2/1 11 -		WSCF							
Sample #	Client ID	CAS#	Test Performed	Matrix	Method .	RQ	Result	Unit	DF	MDL	Analyze Sample	Receive
W030000160	B16RX9 GPP	60-29-7	Diethyl ether	SOLID	Organics	U	<5.00e+03	ug/kg		5.0e+03	05/02/03 04/04/03	04/04/03
W030000160	B16RX9 GPP	107-21-1	Ethylene glycol	SOLID	Organics	U	< 5.00e+03	ug/kg		5.0e+03	05/02/03 04/04/03	04/04/03
W030000160	B16RX9 GPP	67-56-1	Methanol	SOLID	Organics	Ü	< 1.00e+03	ug/kg		1.0e+03	05/02/03 04/04/03	04/04/03
W030000160	B16RX9 GPP	14596-10-2	Am-241 by AEA	SOLID	LA-508-471	U	0.0210	pCi/g	******************	0.31	04/18/03 04/04/03	04/04/03
W030000160	B16RX9 GPP	ET.C	Am-241 by AEA Total Critis Error	SOLID	LA-508-471		840	*		0.0	04/18/03 04/04/03	04/04/03
W030000160	B16RX9 GPP	24959-67-9	Bromide (Br) by IC	SOLID	LA-533-410	U	< 0.855	ug/g	19.00	0.86	04/10/03 04/04/03	04/04/03
M030000180	BIGRX9 GPP	16887-00-6	Chloride (CI) by (C	SOLID	LA-533-410		19.4	ug/g	19.00	0.27	04/10/03 04/04/03	04/04/03
W030000160	B16RX9 GPP	16984-48-8	Fluoride (F) by IC	SOLID	LA-533-410	7	1.03	ug/g	19.00	0.13	04/10/03 04/04/03	04/04/03
W030000160	816RX9 GPP	NO3-N	Nitrate (N) by IC	SOLID	LA-533-410		415	ug/g	9.82e+002	4.9	04/09/03 04/04/03	04/04/03
W030000160	B16RX9 GPP	NO2-N	Nitrite (N) by IC	SOLID	LA-533-410	-,,,	0.406	ug/g	19.00	0.17	04/10/03 04/04/03	04/04/03
M030000160	BIGRX9 GPP	14265-44-2	Phosphate (P) by IC	SOLID	LA-533-410	1	5.04	ug/g	19.00	0.25	04/10/03 04/04/03	04/04/03
W030000160	***********************************	14808-79-8	Sulfate (SO4) by IC	SOLID	LA-533-410		114	ug/g	19.00	0.46	04/10/03 04/04/03	04/04/03
W030000160	816PX9 GPP	ET.C	Ac-228 Ref % Count Error (GEA)	SOLID	LA-508-462		16.9	₩.		0.0	04/09/03 04/04/03	04/04/03
W030000160	ada nunado nun de por estado de debeda para de para de pueda de pro-	14331-83-0	Ac-228 by GEA	SOLID	LA-508-462		0.429	pCi/g		0.037	04/09/03 04/04/03	
M030000180	484848787808484898888784848484848484848484848	ET.C	Am-241 Rel.% Count Error (GEA)	SOLID	LA-508-462		78.4	%		0.0	04/09/03 04/04/03	\$86909032708080808
W030000160	eleneral di altra di entre del eleneral del esta del esta del esta del elementario del esta del esta del esta d	14596-10-2	Am-241 by GEA	SOLID	LA-508-462	υ	0.152	pCi/g	. 4 4. 4. 4. 4. 4. 4	0.17	04/09/03 04/04/03	
W630000160	646769696967676767676767676464776467776967676767	ETO	Bi-212 Rel.% Count Error (GEA)	SOLID	LA-508-462		30.9	*		0.0	04/09/03 04/04/03	
W030000160	and the control of th	14913-49-6	Bi-212 by GEA	SOLID	LA-508-462		0.288	pCi/g	*****************	0.093	04/09/03 04/04/03	
W630000166	\$	ETC	Bi-214 Rel. (Count Error (GEA)	SOLID	LA-508-462		16.6	%		0. 0	04/09/03 04/04/03	3949494949494949
W030000160		14733-03-0	Bi-214 by GEA	SOLID	LA-508-462	tetereretetetek	0.362	pCi/g		0.023	04/09/03 04/04/03	satutata karata batan
W030000160	\$	ÈT,C	Ce-144 Rel.% Count Error (GEA)	SOLID	LA-508-462		392	*		0.0	04/09/03 04/04/03	
W030000160		14762-78-8	Ce-144 by GEA	SOLID	LA-508-462	U aranganasan	0.0198	pCi/g	4.1414141.41.41.41414141	0.12	04/09/03 04/04/03	
M030000180		57. 9	Co-60 Rel. % Count Error (GEA)	SOLID	LA-508-462		322	%		0.0	04/09/03 04/04/03	444144444444444444
W030000160		10198-40-0	Co-60 by GEA	SOLID	LA-508-462	U mantenateratera	1.96e-03	pCi/g	te e e e e e e e eletetet	0.011	04/08/03 04/04/03	tera aradataban birat
W030000160	:0::0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:	ETC	Cu-134 Rel.% Count Error (GEA)	SOLID	LA-508-462		68.6	%		0.0	04/09/03 04/04/03	
W030000160	atorari, romani kokokatora kanani kanani monora na komani a	13967-70-9	Co-134 by GEA	SOLID	LA-508-462	U Harana	0.0227	pCi/g	d 1-1-1-1-1-1-1-	0.015	04/09/03 04/04/03	. Sanarararara
W030000160	B16RX9 GPP	ET.C	Ca-137 Rel.% Count Error (GEA)	SOLID	LA-508-462		1,00e ± 03	%		0.0	04/09/03 04/04/03	04/04/03

MDL=Minimum Detection Limit

B - The analyte < the RDL but > = the IDL/MDL (inorganic)

RQ=Result Qualifier

X - Other flags and notes described in the comments/narrative.

E - Analyte is an estimate, has potentially larger errors

U - Analyzed for but not detected above limiting criteria.

DF=Dilution Factor

- Indicates results that have NOT been validated;

.+ - Indicates more than six qualifier symbols

ω_{Report W004/ver. 5.1}

Ground Water Protection Program

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Sample Delivery Group	WSCF20030461
Sample Matrix	Soil
Sample Visual	Brown
SAF Number	F03-006
Data Deliverable	Summary Report

Introduction

Two (2) soil samples (B16RX8, B16RX9) from the GPP was received at the WSCF Laboratory on April 4, 2003. The sample was analyzed for those analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Groundwater Protection Program-Letter of Instruction*, referenced in the cover letter.

The narrative (Attachment 1) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 2) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information. Copies of the chain of custody and Request for Sample Analysis forms are included as Attachment 3.

Analytical Methodology for Requested Analyses

- ICP-MS Metals by EPA Method 200.8 and ICP-AES Metals by EPA SW-846 Method 6010A. Analytical work was performed with no deviations to the approved method.
- VOA's by EPA SW-846 Method 8260A. Analytical work was performed with no deviations to the approved method. The compound 1-Butanol requested under EPA SW-846 Method 8015 was reported under this method.
- Semi-VOA's by EPA SW-846 Method 8270B. Analytical work was performed with no deviations to the approved method.
- Alcohols and Glycols by EPA SW-846 Method 8015. Analytical work was performed
 with no deviations to the approved method. The compound 1-Butanol requested under
 this method was reported under EPA SW-846 Method 8260A.
- WTPH-D by WDOE Method NWTPH-Dx. Analytical work was performed with no deviations to the approved method.
- WTPH-G by WDOE Method NWTPH-Gx. Analytical work was performed with no deviations to the approved method.

- IC Anions and Ammonium by EPA SW-846 Method 300.0 and 300.7. Analytical work was performed with no deviations to the approved method for Ammonium, but a deviation was required for the Anions (see comments below).
- The pH by EPA Method 150.1. Analytical work was performed with no deviations to the approved method.
- Percent Solids by EPA Method 160.3. Analytical work was performed with no deviations to the approved method.
- Cyanide by EPA SW-846 Method 9010. Analytical work was performed with no deviations to the approved method.
- All RadChem analyses (TA/TB, AEA's, GEA) were run by internal WDOE accredited WSCF procedures. Analytical work was performed with no deviations to the approved method.

Comments

PCB's – This analysis was originally on the Sample Chain of Custody when received at the WSCF Laboratory, but the client later requested the analysis not be run.

ICP-MS and ICP-AES Metals – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-27, 2-28, 2-29, 2-30, and 2-48 for QC details.

VOA's – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-36, 2-37 and 2-38 for QC details. Compounds listed on the tentatively identified peak report with an "N" qualifier have been identified with the program used to interpret the raw data.

Semi-VOA's – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-44, 2-45, 2-46 and 2-47 for QC details. Compounds listed on the tentatively identified peak report with an "N" qualifier have been identified with the program used to interpret the raw data.

Alcohols and Glycols – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-37 for QC details.

WTPH-D - The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-40 for details.

WTPH-G – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-39 for details.

IC Anions – The client requested hold time(s) for this analysis was not met. The client was notified and requested WSCF to continue with this analysis. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-33, 2-34 and 2-36 for QC details.

NH4 – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-38 for QC details.

The pH – Per the direction of the chain of custody, the pH was completed within 24 hours of sampling.

Percent Solids – PCB's, VOA's, Semi-VOA's, Alcohols and Glycols, WTPH-G and WTPH-D analytical results were corrected for percent solids. All other analytical results were reported for the sample as received.

CN – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-26 for QC details.

RadChem – There are no hold times associated with these WDOE accredited methods. Except for GEA, a Laboratory Control Sample and Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-31, 2-32, and 2-35 for QC details.

This Summary Report is in compliance with the SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the WSCF Laboratory Analytical Manager and Client Services, as verified by the following signature.

Troy Dale

WSCF Production Control

<u>Abbreviations</u>

Hg - mercury

IC - ion chromatography

ICP - inductively coupled plasma

ICP/AES - ICP/atomic emission spectroscopy

ICP/MS - ICP/mass spectrometry

Total U - total uranium

AT/TB - total alpha/total beta

AEA - Alpha Energy Analysis

WTPH-G - Total Hydrocarbons-Gasoline

Am - americium

Cm - curium

Pu - plutonium

Np - neptunium

GEA – gamma energy analysis

H3 - Tritium

Sr - Strontium 89, 90

WTPH-D - Total Hydrocarbons-Diesel

TSS - Total Suspended Solids

				51510	3			-						
FH-Central Plateau	ı Project	CH	IAIN OF CUST	TODY/S	AM	PLE ANAI	YSIS	RE	QUEST		F03	-006-014	Page 1	of L
Collector Johansen/Pope/Pfister	Compa	Company Contact Telephone No. LC Hulstrom 373-3928							ator	Price Code 8N		Data Tu	rnaround	
Project Designation 200-PW-2/200-PW-4 OU - Box	rehole Soil Sampling	Sampli	Sampling Location 216-A-19 (C3245) 22.5-25.0 ft					SAF No. F03-006			Air Quality 🗍		30 Days	
Ice Chest No. SMC -	69		Field Logbook No. COA Method of Shipment HNF-N-3361 117504ES10 Government Vehicle											
Shipped To Waste Sampling & Characterization			Property No.	NIK	7			Bill	of Lading/A	ir Bill N	o. MA			
POSSIBLE SAMPLE HAZAR	DS/REMARKS		Preservation	Cool 4C	C ₀	ol 4C None	Non	nc						
Special Handling and/or Ste	Drage		Type of Container	aG		Js* P	Snap	Vial:						
opecial izanama and or or			No. of Container(s)	1		3 1	1	*						
0		- [Volume	250mL	40	OmL 500mL	60m	ıL.						
00021	sample analy	rsis		See Item (1) in Special Instructions.	Sp	em (2) in See item (3) social Special Instructions	1	Scan		·				
Sample No.	Matrix *	Sample Date	Sample Time	11 To 1 T										
B16RX8 W 536 220159	SOIL	4-4-03	1348	×	,	< ×	×							
B16RX9 W 33 ObesiteO	SOIL .	4-4-0	3 /348	×	,	< ×	×							
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		·		 	-								 	<u> </u>
CHAIN OF POSSESSION	 -L	Sign/Print	Names	<u> </u>	<u> </u>	EDECIAL INCO	-DUGWI	ONG.			· <u> </u>		ــــــــــــــــــــــــــــــــــــــ	Matrix *
Relinquished By/Removed Joyn (All Relinquished By/Removed From Relinquished By/Removed From	inquished By/Removed Prom Date/Time The laboratory is to report both kerosene and diesel range compounds from the WTPH-D analysis. "The laboratory is to report both kerosene and diesel range compounds from the WTPH-D analysis. (I) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) {2-Butoxyethanol, Tributyl-plusphate TPH-Diesel Range - WTPH-D; PPH-Gasoline Ra							.phosphate); nol} nr-155);	S=Soil SE=Scalaucent SO=Solid SI=Studge W = Water O=Oil A=Air DS=Orann Solids					
Relinquished By/Removed From Date/Time Recei			Received By/Stored In Da			228); Isotopic Plu (Complete) (Antii	tonium; Ar nony, Arse	Americium-241; Isotopic Uranium; Trace Elements ICP/MS - 200.8 DL-Druss Lie Testisme Viewige Wiewige Wiewige						DL=Onus Liqui T=Ticsec WI=Wipc
Relinquished By/Removed From Date/Time Receiv			d In D	ate/Time		(Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Cyanide (Total) - 335.2; Cations (IC) - 300.7 {Nitrogen in ammonium}; pH (Soil) - 9045						Total) -	L=Liquid V=Vegetation X=Other	
Relinquished By/Removed From	Date/Time	Received By/Store	d in D	alc/Time]								
LABORATORY Received By SECTION			<u> </u>	Ti	itle	<u> </u>			<u>·</u>				Date/Time	
FINAL SAMPLE Disposal Meth	nod	<u></u>	•	· · · · · ·		. , Dis	posed By	-		·····		<u>-</u>	Date/Time	

EE-011 (03/01/2002)

Appendix 5

Data Validation Supporting Documentation

VALIDATION

GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS

LEVEL:				1	E			
рколест: 200	5-PW-2/200	-Pw-4	DATA PACKAGE: WSCF2003046					
VALIDATOR:	TU	LAB: WSC.						
CASE:			SDG: 30461					
		ANALYSES	PERFORMED		· · · · · · · · · · · · · · · · · · ·			
Anions/IC	TOC	тох	TPH-418.1	Oil and Grease	Alkalinity			
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO ₂ /NO ₂			
Sulfate	TDS	TKN	Phosphate	chand)				
	TPH/DIG/9	188						
	•	ETENESS AND C		76:	Soil			
			9	!#####################################	165 119 11			
Comments:								
Comments:	IENT PERFORM	ANCE AND CAL	•	els D and E)	Yes No N			

ICV and CCV checks performed on all instruments? Yes No N/A
ICV and CCV checks acceptable? Yes No N/A

Standards traceable? _______ Yes No

Standards expired? ______Yes No

Calculation check acceptable? Yes No

Comments:

NA

NA

N/A

GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS

3.	BLANKS (Levels B, C, D, and E)	
ICB 1	and CCB checks performed for all applicable analyses? (Levels D, E)	Yes No NA
	Yes No (NA)	
	ratory blanks analyzed?ratory blank results acceptable?	
	blanks analyzed? (Levels C, D, E)	(/ / /)
	blank results acceptable? (Levels C, D, E)	
	cription/calculation errors? (Levels D, E)	
	ments:	
		
_	ACCREMANCE OF THE PARTY OF THE	
4.	ACCURACY (Levels C, D, and E)	
	samples analyzed?	
	recoveries acceptable?	
	standards NIST traceable? (Levels D, E)	
Spike	standards expired? (Levels D, E)	No NA
LCS/	BSS samples analyzed?	INA NA
LCS/	BSS results acceptable?	Yes No N/A
	lards traceable? (Levels D, E)	
	lards expired? (Levels D, E)	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
	cription/calculation errors? (Levels D, E)	
	rmance audit sample(s) analyzed?	<u> </u>
	rmance audit sample results acceptable?	Yes No NA
Com	ments: MS- Floorice 12790 J	NO PAS
	Ms among 3190 J	
	pe 10/18/2-	
¥	croscretigeset - No US J	
	No Direct Las - 3/ polision	

GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS

5. PR	RECISION (Levels C, D, and E)	_		
Duplicate R	PD values acceptable?	Yes	No N	٧Ą
Duplicate re	esults acceptable?	V Ves	No	ľ/A
	tandards NIST traceable? (Levels D, E)		No (r	(A)
	tandards expired? (Levels D, E)		No A	耐
Field duplic	ate RPD values acceptable?	Yes	No A	\mathcal{N}
	PD values acceptable?		•	_
	on/calculation errors? (Levels D. E)			_
	Emmona 3820 RPD J Fluord 672 Jall	144044444		
•	Fluord 1022 Jall			
				_
				-
				•
				
6. He	OLDING TIMES (all levels)			
	operly preserved?	vad		.1/A
				V/A.
Comments:	bH - 50.81 2X the limit - T	У СЗ	א פעו	₩A.
Continues.	pH - onas ZX the limt - I preservation - no coulj I ammain		1	
	preserved to conty I ammong	- cy	a~//	
		<u> </u>		
				
<u></u>				
				
				

GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS

7.	RESULT QUANTITATION AND DETECTION LIMITS (all levels)	_
Resul	ts reported for all requested analyses?	Yes No N/A
Rresu	lits supported in the raw data? (Levels D, E)	Yes No NA
Samp	ilts supported in the raw data? (Levels D, E)	Yes No NA
Detec	tion limits meet RDL?	YG No NA
Trans	cription/calculation errors? (Levels D, E)	Yes No NA
	ments:	

Appendix 6

Additional Documentation Requested by Client

SDG Number: WSCF20030461 SAF Number: F03-006
Matrix: SOLID Sample Date: 04/04/03
Test: Cyanide by Midi/Spectrophotom Receive Date: 04/04/03

rusi. C	yamuc by Wildi/Specifopi	Otom	Receive Date, 04/04/03								
QC Type	Analyte	CAS#	Results	Units	Analysis Date	Lower Limit	Upper Limit				
Lab ID: BATCH MS MSD SPK-RPD	W030000159 QC ASSOCIATED WIT Cyanide by Midl/Spectrophotom Cyanide by Midl/Spectrophotom Cyanide by Midl/Spectrophotom	TH SAMPLE 57-12-5 57-12-5 57-12-5	108;000 96,700 11,041		04/15/03 04/15/03 04/15/03	75,000 75,000 0,000	125,000 125,000 20,000				
BATCH BLANK BLNK-PREP DUP LCS	Cyanide by Midi/Spectrophotom Cyanide by Midi/Spectrophotom Cyanide by Midi/Spectrophotom Cyanide by Midi/Spectrophotom	57-12-5 57-12-5 67-12-6 57-12-5	0 0 n/a 97.600		04/15/03 04/15/03 04/15/03 04/15/03	-2,000 -4,000 0,000 90,800	2,000 4,000 20,000 110,000				
LCS-2	Cyanide by Midi/Spectrophotom	57-12-5	n/a	% Recov	04/15/03	80.000	120.000				

SDG Number: WSCF20030461

Matrix: SOLID

Test: Anions by Ion Chromatography

SAF Number: F03-006

Sample Date: 04/04/03 Receive Date: 04/04/03

QC Type	Analyte	CAS#	Results	Units	Analysis Date	Lower Limit	Upper Limit
T _L T	N. W02000150					•	
Lab II):	TIMES LITTE					
DUP	Bromide (Br) by IC	24959:67-9	n/a	RPD	04/09/03	0.000	20.000
DUP	Chloride (CI) by IC	16887-00-6	4.950	RPD	04/09/03	0.000	20,000
DUP	Fluoride (F) by IC	16984-48-8	69.244	RPD	04/09/03	0.000	20.000
DUP	Nitrite (N) by IC	NO2-N	1.758	RPD	04/09/03	0.000	20.000
DUP	Nitrata (NI by IC	N03-N	5.863	RPD	04/09/03	0.000	20.000
DUP	Phosphate (P) by IC	14265-44-2	1.376	RPD ·	04/09/03	0.000	20.000
DUP	Sulfate (SO4) by IC	14808-79-8	2.676	RPD	04/09/03	0.000	20,000
MS	Bromide (Br) by IC	24959-67-9	91.457	and a second residence and a second	04/09/03	75.000	125.000
MS MS	Chloride (Cl) by IC Fluoride (F) by IC	16987-00-6 16984-48-8	102.020 127.198	00.000000000000000000000000000000000000	04/09/03 04/09/03	75.000 75.000	125,000 125.000 •
MS	Nitrite (N) by JC	NO2-N	97.817		04/09/03	75.000	125.000
MS	Nitrate (N) by IC	NO3-N	112.332	% Recov	04/09/03	75.000	125.000
Мs	Phosphata (P) by IC	14265-44-2	106,361	% Recov	04/09/03	75.000	125.000
MS	Sulfate (SO4) by IC	14808-79-8	119.289	% Recov	04/09/03	75.000	125.000
MSD	Bromide (Br) by fC	24959-67-9	91,457	750 (800) 1980 (80 0) 11 1800 (8	04/09/03	75.000	126,000
MSD	Chloride (CI) by IC	16887-00-6	100.303	en anderen konstantiak in der en	04/09/03	75.000	125.000
MSD	Fluoride (F) by IC	16984-48-8	120,654	SCREETS CONTRACTOR CONTRACTOR OF THE SCREET	04/09/03 04/09/03	75.000 75.000	1 25,000 1 25,000
MSD MSD	Nitrite (N) by IC Nitrate (N) by IC	NO2-N NO3-N	96.230 87.444	and the second second second second second	04/09/03	75.000	125.000
MSD	Phosphate (P) by IC	14265-44-2	106,361		04/09/03	75.000	125.000
MISD	Sulfate (SO4) by IC	14808-79-8	113,706	% Recov	04/09/03	75.000	125,000
27.77.000, 1000-00.2900000007-000				11000000000000000000000000000000000000	***************	000000000000000000000000000000000000000	
BATC	H QC	•	•				
BLANK	Bramide (Br) by IC	24959-67-9	<4.50e-2	mg/L	04/09/03	0.000	300.000
BLANK	Bromide (Br) by IC	24959-67-9	< 4.50e-2	mg/L	04/08/03	0.000	300,000 300,000
BLANK BLANK	Chloride (CI) by IC	16887-00-6 16887-00-6	<1.40e-2 <1.40e-2	mg/L mg/L	04/09/03 04/09/03	0.000	300.000
BLANK	Chloride (CI) by IC Fluoride (F) by IC	16984-48-8	<7.00e-3	mg/L	04/09/03	0.000	300.000
BLANK	Fluoride (F) by 1C	16984-48-8	<7.00e-3	mg/L	04/09/03	0.000	300,000
BLANK	Nitrite (N) by IC	NO2-N	<9.00e-3	mg/L	04/09/03	0.000	300,000
BLANK	Nitrite (N) by IC	NO2-N	< 9,004-3	mg/L	04/09/03	0.000	300,000
BLANK	Nitrate (N) by IC	NO3-N	<5.00e-3	mg/L	04/09/03	0.000	300.000
BLANK	Nitrate (NI by IC	NO3-N	<5.00€-3	mg/L	04/08/03	0.000	300,000
BLANK	Phosphate (P) by IC	14265-44-2	<1.30e-2	mg/L mg/L	04/09/03 04/09/03	0.000 0.000	300.000 300.000
BLANK	Phosphate (P) by IC	14285-44-2 14808-79-8	< 1.30e-2 < 2.40e-2	mg/L mg/L	04/09/03	0.000	300.000
BLANK BLANK	Sulfate (SO4) by IC Sulfate (SO4) by IC	14808-79-B	< 2.406-2	mg/L	04/09/03	0.000	300,000
LCS	Bromide (Br) by IC	24959-67-9	94.763	% Recov		80.000	120,000
LCS	Chloride (CI) by IC	16887-00-6	96,000	% Recov	04/09/03	80,000	120,900
LCS	Fluoride (F) by IC	16984-48-8	98.480	and the second of the second second	04/09/03	80,000	120.000
LCS	Nitrite (N) by IC	NO2-N	97.255		04/09/03	80.000	1 20.000 1 20.000
LCS	Nitrate (N) by IC	NO3-N	93,230	76 Keco∨	04/09/03	80.000	120.000

Report w13q/rev.5.1 p 8 30-may-2003 13:21:29

SDG Number: WSCF20030461

Matrix: SOLID

Test: Anions by Ion Chromatography

SAF Number: F03-006 Sample Date: Receive Date:

QC Type	Analyte	CAS#	Results	Units	Analysis Date	Lower Limit	Upper Limit	
ECS	Phosphate (P) by IC	14265-44-2	99.587	% Recov	04/09/03	90.000	\$20:000	
LCS	Sulfate (SO4) by IC	14808-79-8	97.995	% Recov	04/09/03	80.000	120.000	

SDG Number: WSCF20030461

Matrix: SOLID

Test: Ammonia (N) by IC

SAF Number: F03-006 Sample Date: 04/04/03

Sample Date: 04/0 Receive Date: 04/0

04/04/03

QC Analysis Lower Upper Type Analyte CAS # Results Units Date Limit Limit

Lab ID: W030000159

BATCH OC ASSOCIATED WITH SAMPLE

7864-41-7 0.000 20,000 OUP Ammonia (N) by IC 10.313 04/23/03 7664-41-7 31.273 % Recov 04/23/03 75.000 125.000 Ammonia (N) by IC MS 75.000 125.000 7664-41-7 21.938 % Recov 04/23/03 MSD Ammonia (N) by IC

BATCH QC

<4.00e-3 04/23/03 BLNK-PREP Ammonia (N) by IC 7664-41-7 Ratio <4.00e-3 Hatio 04/23/03 BLNK-PREP Ammonia (NI by IC 7664-41-7 120,000 04/23/03 80,000 Ammonia (N) by IC 7664-41-7 99.638 % Recov

Date:

17 November 2003

To:

Fluor Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

200-PW-2/200-PW-4 OU - Borehole Soil Sampling

Subject: Volatiles - Data Package No. WSCF20030461 (SDG No. 3046

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. 30461 prepared by WSCF. A list of the samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Śample	Media	Validation	Analysis
B16RX8	4/4/03	Soil	С	See note 1
B16RX9	4/4/03	Soil	С	See note 1

1 - Volatiles by EPA 8260B and alcohols/glycols by 8015M.

2 - n-Butanol was analyzed by 8260A, not 8015M as requested by FHI. All other 8260A analytes were not validated per FHI request.

Data validation was conducted in accordance with the FHI validation statement of work and the 200-PW-2 Uranium-Rich Process Waste Group Operable Unit RI/FS Work Plan and RCRA TSD Unit Sampling Plan (DOE/RL-2000-60, Rev. 1, December 2000). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Documentation Requested by Client

DATA QUALITY OBJECTIVES

Holding Times/Sample Preservation

Analytical holding times are assessed to ascertain whether the holding time requirements were met by the laboratory. samples must be analyzed within 14 days of the date of sample collection for VOAs and alcohols. If holding times are exceeded, but not by greater than twice the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If

non-detects. If holding times are exceeded by greater than twice the limit, all associated detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples of a given matrix. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the project quantitation limit (MDL) and is less than five times (or less than ten times for laboratory contaminants) the highest associated blank result, the sample result value is raised to the MDL, qualified as undetected and flagged "U".

All method blank results were acceptable.

Field Blanks

No field duplicate samples were submitted for analysis.

Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike

Matrix spike/matrix spike duplicate and blank spike analyses are used to assess the analytical accuracy of the reported data. The matrix spike/matrix spike duplicate are used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using the target compounds for which percent recoveries must be within 70-130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All MS/MSD and blank spike results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of system performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory program. When a surrogate compound recovery is out of the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Undetected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Samples with surrogate recoveries less than ten percent are qualified as estimates and flagged "J" for detects, and rejected and flagged "UR" for nondetects. Undetected compounds with surrogate recoveries greater than the upper control limit require no qualification. Surrogates are not required for formaldehyde analysis.

All surrogate recovery results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Sample results must be within RPD limits of +/- 35%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All MS/MSD RPD results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

Detection Limits

Reported analytical detection levels are compared against the target quantitation limits (TQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the TQL.

Completeness

Data package No. 30461 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

FHI, Contract #20266, Validation Statement of Work, Fluor Hanford Incorporated, July 7, 2003.

DOE/RL-2000-60, Rev. 1, 200-PW-2 Uranium-Rich Process Waste Group Operable Unit RI/FS Work Plan and RCRA TSD Unit Sampling Plan, December 2000.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validator in compliance with the BHI validation SOW are as follows:

- U Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- Indicates presumptive evidence of a compound at an estimated value.
 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: 30461	REVIEWER: TLI	DATE: 11/17/03	PAGE_1_OF_1_
COMMENTS: No qualifiers	assigned		

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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Project: FLUOR-HANFORD]													
Laboratory: WSCF																	
Case:	SDG: WS	CF200304	51														
Sample Number		B16RX8		B16RX9		_					~						
Remarks																	
Sample Date		04/04/03		04/04/03													
Analysis Date		04/16/03		04/16/03								<u> </u>					
VOA/Alcohols	TQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q.	Result	Q	Result	Q	Result	Q
1,1-Dichloroethene*	10	<2.10	U	<2.00	U	I							1			1	
1-Butanol	5000	<21.0	U	<20.00	υ												1
Benzene*	5		U	<2.00	Ú									1		-	+
Chlorobenzene*	5	<2.10	υ	<2.00	U						\top		 	1	\top		+
Toluene*	5	<2.10	Ų	<2.00	U								\top		\top	 	+
Trichloroethene*		<2.10	U	<2.00	U												丰
2-Bromoethanol		14000		13000				 	+	 	+	 	-		+	 	+
Diethyl ether		<5000	U	<5000	U			<u> </u>	1		1		t	 	1	— —	+
Ethylene glycol	5000	<5000	U	<5000	U								T		\top	 	+-
Methanol		<1000	U	<1000	U										1		+
														<u> </u>	1		1
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* - not validated per FHI request	•	-									\top		†	<u> </u>	1	 	+
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Attention: Project:

Steve Trent F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

	•				WSCF						
Sample #	Client ID	CAS#	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	Analyze Sample Receive
W030000159	B16RX8 GPP	126-73-8	Tri-n-butylphosphate	SOLID	LA-523-456	Ú	94.0	ug/kg	1,00	7)	04/18/03 04/04/03 04/04/03
W030000159	B16RX8 GPP	111-44-4	bis(-2-Chloroethyl)Eth	SOLID	LA-523-456	U	< 260	ug/kg	1.00	2.6e+02	04/18/03 04/04/03 04/04/03
W030000159	B16RXB GPP	111-91-1	bis(2-Chloroethoxy)methane	SOLID	LA-523-456	U	< 120	ug/kg	1.00	1.2#+02	04/18/03 04/04/03 04/04/03
W030000159	B16RX8 GPP	13966-29-5	U-234 by AEA	SOLID	LA-508-471	. 14 - 1541 114 - 2 - 411 11	3.60	pCi/g		0.099	04/28/03 04/04/03 04/04/03
W0300001E9	B16RX8 GPP	ET.C	U-234 by AEA Total Cntg Error	SOLID	LA-508-471		22,0	%		6.0	04/28/03 04/04/03 04/04/03
W030000159	B16RX8 GPP	15117- 96 -1	U-235 by AEA	SOLID	LA-508-471	.*****	0.420	pCl/g		0.093	04/28/03 04/04/03 04/04/03
W030000159	BIGRXB GPP	E,T,C	U-235 by AEA Total Cntg Error	SOLID	LA-508-471		38.0	96		0.0	04/28/03 04/04/03 04/04/03
W030000159	B16RX8 GPP	24678-82-8	U-238 by AEA	SOLID	LA-508-471		28.0	pCi/g		0.067	04/28/03 04/04/03 04/04/03
W030000159	B16RX8 GPP	E,T,C	U-238 by AEA Total Cntg Error	SOLID	LA-508-471		19,0	%		0.10	04/28/03 04/04/03 04/04/03
W030000159		75-35-4	1,1-Dichloroethene	SOLID	LA-523-455	υ	< 2.10	ug/kg	1,00	2,1	04/16/03 04/04/03 04/04/03
- W030000159	\$4\$\$P\$P\$ About 18 to 18 t	71-36-3	1-Butanol	SOLID	LA-523-455	U	< 21.0	ug/kg	1.00	21	04/16/03 04/04/03 04/04/03
W030000159		71-43-2	Benzene	SOLID	LA-523-455	*	< 2.10	ug/kg	1.00	2.1	04/16/03 04/04/03 04/04/03
W030000159	\$	108-96-7	Chlorobenzene	SOLID	LA-523-455	U	< 2.10	ug/kg	1,00	2.1	04/16/03 04/04/03 04/04/03
		108-88-3	Toluene	SOLID	LA-523-455	U	< 2,10	ug/kg	1.00	2.1	04/16/03 04/04/03 04/04/03
		79-01-6	Trichloroethene	SOLID	LA-523-455	U	< 2.10	ug/kg	1.00	2.1	04/16/03 04/04/03 04/04/03
		8008-20-6	Kerosene Hali didalah didak didak dibak didak di kepid	SOLID	NWTPH	ີ ປ	< 4.20e+03		1.00	4,2e+03	05/01/03 04/04/03 04/04/03
	Port III var et teknike kelatatar et en kanada kanada kelatat et et en kelatar et et et kanada.	68476-34-6	Total Pet. Hydrocarbons Diesel	SOLID	NWTPH		7.80a+0	, and the parties	1,00	4.20+03	05/01/03 04/04/03 04/04/03
W030000159	ran in transportation and restrict and restr	84-15-1	ortho-Terphenyl	SOLID	NWTPH		2.00e + 04	(1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+	1.00	2.1e+02	05/01/03 04/04/03 04/04/03
W030000160	: Parka Parku Para Bras Para Para Parka Parka Parka Parti Parti Parti Parku Partu Para Para Para Para Parti Pa	7664-41-7 57-12-5	Ammonia (N) by IC	SOLID	LA-503-401		6.79	ug/g	50.00	0.20	04/23/03 04/04/03 04/04/03
W030000160	B16AX9 GPP	37-12-5 118	Cyanide by Midi/Spectrophotom Percent Solids	SOLID	LA-695-402 LA-519-412	U Received	< 0.200	mg/kg	0.99 Distribution	0.20	04/15/03 04/04/03 04/04/03 04/22/03 04/04/03 04/04/03
W030000160		PH	pH Soil and Waste Measurement	SOLID	LA-212-411		94.1 9.59	96		0.010	04/22/03 04/04/03 04/04/03
W030000160	Contratation and action of the contratation of the second	12587-46-1	Alpha by liquid scintillation	SOLID	LA-508-421		12.0	pH ::::::::::::::::::::::::::::::::::::		1.8	04/09/03 04/04/03 04/04/03
W030000160	B16RX9 GPP		Alpha error by LC	SOLID	LA-508-421		50.0	pCi/g %		0.0	04/09/03 04/04/03 04/04/03
Lighter are the temperature for	Total Charles and a second section of the control o	12587-47-2	Beta by liquid spintillation	SOLID	LA-508-421	1.0000000000000000000000000000000000000	35.0	70 pCi/g	sancareta r	3.4	04/09/03 04/04/03 04/04/03
W030000160	to representations to the control of		Beta error by LC	SOLID	LA-508-421		31.0	PCVY		0.0	04/09/03 04/04/03 04/04/03
-w030000160	la distributa da trata da bara ser a contrata da trata de trata de trata de como de como de como como como com	540-51-2	2-Bromoethanol	SOLID	Organics	alalafalalata 1960	31.0 1.30e ± 04	70 (11) (12) (13)	talalalalalalala	5.0s + 03	05/02/03 04/04/03 04/04/03
				JULIU	∵(garnus		11-3UE + U	ug/kg		OUBTUS	

MDL=Minimum Detection Limit

B - The analyte < the RDL but > = the !DL/MDL (inorganic)

RQ=Result Qualifier

J - Estimated Value

X - Other flags and notes described in the comments/narrative.

E - Analyte is an estimate, has potentially larger errors

U - Analyzed for but not detected above limiting criteria.

DF=Dilution Factor

* - Indicates results that have NOT been validated;

+ - Indicates more than six qualifier symbols

Report W004/ver. 5.1

Ground Water Protection Program



Attention: Project:

Steve Trent

F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

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						WSCF								
Sample #	Client III)	CAS#	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
W030000159	B16RX8	GPP	7664-41-7	Ammonia (N) by IC	SOLID	LA-503-401		6.22	ug/g	50.00	0.20	04/23/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	57-12-5	Cyanide by Midi/Spectrophotom	SOLID	LA-695-402	U	< 0.200	mg/kg	0,98	0.20	04/15/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	πs	Percent Solids	SOLID	LA-519-412		94.1	%		0.0	04/22/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	PH	pH Soil and Waste Measurement	SOLID	LA-212-411	*	9.60	pН	2424 10704040404044	0.010	04/22/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	12587-45-1	Alpha by liquid scintillation	SOLID	LA-508-421		12.0	pCi/g		1.7	04/09/03	04/04/03	04/04/03
W030000159	B16RX8	GPP		Alpha error by LC	SOLID	LA-508-421		41,0	%		0.0	04/09/03	04/04/03	04/04/03
W030000159	816RX8	GPP	12587-47-2	Beta by liquid scintillation	SOLID	LA-508-421		35.0	pCi/g		3.1	04/09/03	04/04/03	04/04/03
W030000159	B16RX8	GPP		Beta error by LC	SOLID	LA-508-421	1114121 121 1421	30,0	%		0.0	04/09/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	540-51-2	2-Bromoethanel	SOLID	Organics		1,40a+04	ug/kg		5.0a ± 03	05/02/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	60-29-7	Diethyl ether	SOLID	Organics	U	< 5.00a+03	ug/kg		5.0e+03	05/02/03	04/04/03	04/04/03
W030000159	B16RX8	GPP .	107-21-1	Ethylene glycol	SOLID	Organics	U	< 5,00e+03	ug/kg		5.0a ±03	05/02/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	67-56-1	Methanol	SOLID	Organics	U.	< 1.00e+03	ug/kg	**************************************	1.0e+03	05/02/03	04/04/03	04/04/03
W030000159	B16RX8	GPP*	14596-10-2	Am-241 by AEA	SOLID	LA-508-471	U	0 176	pCI/a		0.26	04/18/03	04/04/03	04/04/03
_W030000159	B16RX8	GPP	E,T,C	Am-241 by AEA Total Cntg Error	SOLID	LA-508-471		98.0	%		0.0	04/18/03	04/04/03	04/04/03
	B16RX8	GPP	24959-67-9	Bromide (Br) by IC	SOLID	EA-533-410	Ú	< 0.900	ug/g	20.00	0.90	04/09/03	04/04/03	04/04/03
	B16RX8	GPP	16887-00-6	Chloride (CI) by IC	SOLID	LA-533-410		20,7	ug/g	20.00	0.28	04/09/03	04/04/03	04/04/03
	B16RX8	GPP	16984-48-8	Fluorida (f) by IC	SOLID	LA-533-410	ВX	0.981	U0/Q	20.00	0.14	04/09/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	NO3-N	Nitrate (N) by IC	SOLID	LA-533-410		447	ug/g	9.89e+00	2 4.9	04/09/03	04/04/03	04/04/03
W030000159	B16RX9	GPP	NO2-N	Nitrite (N) by IC	SOLID	LA-533-410	В	0.451	ug/g	20,00	6.18	04/09/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	14265-44-2	Phosphate (P) by IC	SOLID	LA-533-410	В	4.33	ug/g	20.00	0.26	04/09/03	04/04/03	04/04/03
W030000159	816RX8	GPP	14808-79-8	Sulfate (SO4) by IC	SOLID	LA-533-410		118	ug/ç	20.00	0.48	04/09/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	E,T,C	Ac-228 Rel.% Count Error (GEA)	SOLID	LA-508-462		16.8	%		0.0	04/08/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	14331-83-0	Ac-228 by GEA	SOLID	LA-508-462		0,460	pCi/g		0.036	04/08/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	E,T,C	Am-241 Rel,% Count Error (GEA)	SOLID	LA-508-462		23,4	%		0.0	04/08/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	14596-10-2	Am-241 by GEA	SOLID.	LA-508-462	U	0.726	pCi/g		0.22	04/08/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	E,T,C	Bi-212 Rel.% Count Error (GEA)	SOLID	LA-508-462		33.6	%		0.0	04/08/03	04/04/03	04/04/03
W030000159	B16RXB	GPP	14913-49-6	Bi-212 by GEA	SOLID	LA-508-462		0.270	pCi/g		0.092	04/08/03	04/04/03	04/04/03
1 determinate tetrate terminaturu	i deteteración con con	to the transport of the transport of the transport	aranaran basan kacamatan baran b	etal creficiente de terreta de contrate de la companya de la companya de la companya de la companya de la comp	and the contract of the contract of the	note to the contract of the contract of					energane en e		ere	ararara arar

MDL=Minimum Detection Limit RQ=Result Qualifier

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* - Indicates results that have NOT been validated;

Report W004/ver, 5.1

Ground Water Protection Program

+ - Indicates more than six qualifier symbols

Attention: Project:

Steve Trent

F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

	ojecti	1050	00. 200 I W	2/1 () 1		WSCF								
Sample #	Client II)	CAS#	Test Performed	Matrix	Method	RO	Result	Unit	DF	MDL	Analyze	Sample	Receive
W030000159	B16RX8	GPP	126-73-8	Tri-re-butylphosphate	SOLID	LA-523-456	U	94.0	ug/kg	1.00	71	04/18/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	111-44-4	bis(-2-Chloroethyl)Eth	SOLID	LA-523-456	U	< 260	ug/kg	1.00	2.6e+02	04/18/03	04/04/03	04/04/03
W030000159	B16RXB	GPP	111-91-1	bis(2-Chloroethoxy)methane	SOLID	LA:523-456	u i	< 120	ug/kg	1.00	1 2s + 02	04/18/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	13966-29-5	U-234 by AEA	SOLID	LA-508-471	1-1-1-1-1-1-1-1-1-1-1	3.60	pCi/g	-1-1-1-1-1-1-1-1-1-1	0.099	04/28/03	04/04/03	04/04/03
W030000159	B16AX8	GPP	E.T.C	U-234 by AEA Total Cotg Error	SOLID	LA-508-471		22.0	%		0.0	04/28/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	15117-96-1	U-235 by AEA	SOLID	LA-508-471	e oje sukukuryejeje	0.420	pCi/g		0.093	04/28/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	E.T.C	U-235 by AEA Total Critic Error	SOLID	LA-508-471		38.0	%		0.0	04/28/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	24678-82-8	U-238 by AEA	SOLID	LA-508-471	. *	28.0	pCt/g		0.067	04/28/03	04/04/03	04/04/03
W030000159	B16RX8	GPP:	E.T.C	U-238 by AEA Total Cntg Error	SOLID	LA-508-471		19.0	96		0.10	04/28/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	75-35-4	1,1-Dichloroethene	SOLID	LA-523-455	U	< 2.10	ug/kg	1.00	2.1	04/16/03	04/04/03	04/04/03
-wa30000159	B16RX8	GPP	71-36-3	1-Butanol	SOLID	LA-523-455	Ü	< 21.0	ug/kg	1.00	21	04/16/03	04/04/03	04/04/03
W030000159	and the experience of	GPP	71-43-2	Benzene	SOL:ID	LA-523-455	U	< 2.10	ug/kg	1.00	2.1	04/16/03	04/04/03	04/04/03
W030000159	4000 3000 40	GPP .	108-90-7	Chigropenzene	SØLID	LA-523-455	u	< 2,10	ug/kg	1,00	2.1	04/16/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	108-88-3	Toluene	SOLID	LA-523-455	U	< 2.10	ug/kg	1.00	2.1	04/16/03	04/04/03	04/04/03
	B16RXB	GPP	79-01-6	Trichloroethena	SOLID	LA-523-455	ช	< 2.10	ug/kg	1.00	2.1	04/16/03	04/04/03	04/04/03
W030000159	e elektronia alektronia	GPP	8008-20-6	Kerosene	SOLID	NWTPH	U	< 4.20a+03	ug/kg	1.00	4.2e+03	05/01/03	04/04/03	04/04/03
W030000159		GPP	68476-34-6	Total Pet. Hydrocarbons Diesel	SOLID	NWTPH	Ú	7.804+03	ug/kg	1.00	4.2e+03	05/01/03	04/04/03	04/04/03
W030000159	B16RX8	GPP	84-15-1	ortho-Terphenyl	SOLID	NWTPH		2.00e+04	ug/kg	1.00	2.1e+02	05/01/03		
	B16RX9	GPP	7664-41-7	Ammonia (N) by (C	SOLID	LA-503-401		6.79	ug/g	50.00	0.20	04/23/03		\$17,1499341917114.4
₩ ₀₃₀₀₀₀₁₆₀	terror and an area to the control of the	GPP	57-12-5	Cyanide by Midi/Spectrophotom	SOLID	LA-695-402	U	< 0.200	mg/kg	0.99	0.20	04/15/03		
787970 280868292888850717	B16RX9	.GPP	TS	Percent Solids	SOLID	LA-519-412		94.1	ъ		0.0	04/22/03		(2) (2) (2) (2) (2) (2)
W030000160	B16RX9	GPP	PH	pH Soil and Waste Measurement	SOLID	LA-212-411		9.59	pH	and a second	0.010	04/22/03	runui ururuketete	e Se Sa Se
W030000160	B16RX9	GPP	12587-46-1	Alpha by Ilquid scintillation	SOLID	LA-508-421		12.0	pCVg		1.8	04/09/03		161010101010101010101
W030000160	B16RX9	GPP	and the factor of the factor o	Alpha error by LC	SOLID	LA-508-421		50.0	%	***********	0.0	04/09/03	والمعاودي ويامي ويامي	
08 10000E0W	F1444444444444	GPP	12587-47-2	Beta by liquid scintillation	SOLID	LA-508-421		35.0	pCi/g		3.4	04/09/03		(51919191919191
W030000160	B16RX9	GPP 	1+1+0+0+0+0 0+0 0+1+1+1+1+5+5+0+	Beta error by LC	SOLID	LA-508-421		31.0	%	and the same of	0.0	04/09/03		************
W030000160	B16RX9	GPP	540-51-2	2-Bremosthanol	SOLID	Organics		1,30e+04	ug/kg		5.0++03	05/02/03	04/04/03	04/04/03

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B - The analyte < the RDL but > = the IDL/MDL (inorganic)

J - Estimated Value

X - Other flags and notes described in the comments/narrative.

DF=Dilution Factor

* - Indicates results that have NOT been validated;

- Indicates more than six qualifier symbols

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Ground Water Protection Program

E - Analyte is an estimate, has potentially larger errors

U - Analyzed for but not detected above limiting criteria.



Attention: Project:

Steve Trent

F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

						WSCF			-					
Sample #	Client II	<u>`</u>	CAS#	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	Analyze S	Sample	Receive
-W030000160	B16RX9	GPP	60-29-7-	Diethyl ether	SOLID	Organics	U	< 5.00a+03	ug/kg		5.0e+03	05/02/03 0	14/04/03	04/04/03
W030000160	B16RX9	GPP	107-21-1	Ethylene gly∞l	SOLID	Organics	n C	< 5.00e+03	ug/kg	riolog Indodedruning	5.0e+03	05/02/03 0	04/04/03	04/04/03
W030000160	B16RX9	GPP	67-56-1	Methanol	SOLID	Organics	Ü	< 1.00e+03	ug/kg		1.0e+03	05/02/03 0	04/04/03	04/04/03
W030000160	B16RX9	GPP	14596-10-2	Am-241 by AEA	SOLID	LA-508-471	U	0.0210	pCi/g	14041414141414141414141	0.31	04/18/03 0	04/04/03	04/04/03
W030000160	B16RX9	GPP	E,T,C	Am-241 by AEA Total Cntg Error	SOLID	LA-508-471		840	*		0.0	04/18/03 0	04/04/03	04/04/03
W030000160	B16RX9	GPP	24959-67-9	Bromide (Br) by IC	SOLID	LA-533-410	U	< 0.855	ug/g	19.00	0.86	04/10/03 0	04/04/03	04/04/03
W030000160	B16RX9	GPP	16887-00-6	Chloride (CI) by IC	SOLID	LA-533-410		19.4	ug/g	19.00	0.27	04/10/03 (04/04/03	04/04/03
W030000160	B16RX9	GPP	16984-48-8	Fluoride (F) by IC	SOLID	LA-533-410	471-1-1-1-1-1-1	1.03	ug/g	19.00	0.13	04/10/03 (04/04/03	04/04/03
W030000160	B15RX9	GPP	NO3-N	Nitrate (N) by IC	SOLID	LA-533-410		415	ug/g	9.82e+002	4.9	04/09/03 0	04/04/03	04/04/03
W030000160	B16RX9	GPP	NO2-N	Nitrite (N) by IC	SOLID	LA-533-410	*111111111	0.406	ug/g	19.00	0.17	04/10/03 (04/04/03	04/04/03
W030000160	B16RX9	GPP	14265-44-2	Phosphate (P) by IC	SOLID	EA-533-410		6.04	ug/g	19.00	0.25	04/10/03 (04/04/03	04/04/03
W030000160	B16RX9	GPP	14808-79-8	Sulfate (SO4) by IC	SOLID	LA-533-410		114	ug/g	19.00	0.46	04/10/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	ET,C	Ac-228 Rel.% Count Error (GEA)	SOLID	LA-508-462		16.8	*		0.0	04/09/03 (04/04/03	04/04/03
○ W030000160	B16RX9	GPP	14331-83-0	Ac-228 by GEA	SOLID	LA-508-462	-3-3-3-3-3-3-3-3-3-3	0.429	pCi/g	-1-1 (-1-1-1-1-1-1-1-1-1	0.037	04/09/03 (04/04/03	04/04/03
₩030000160	B16RX9	GPP	E.T.C	Am-241 Rel % Count Error (GEA)	SOLID	LA-508-462		78.4			0.0	04/09/03 0	04/04/03	04/04/03
○ W030000160	B16RX9	GPP	14596-10-2	Am-241 by GEA	SOLID	LA-508-462	U	0.152	pCi/g		0.17	04/09/03	04/04/03	04/04/03
₩030000160	B16FUX9	GPP:	E,T,C	Bi-212 Rel.% Count Error (GEA)	SOLID	LA-508-462		30.9	₩.		0.0	04/09/03 (04/04/03	04/04/03
w030000160		GPP	14913-49-6	Bi-212 by GEA	SOLID	LA-508-462		0.288	pCi/g	*,**.*	0.093	04/09/03	04/04/03	04/04/03
M0300001E0	B16RX9	GPP	E,T,C	Bi-214 Ref. % Count Error (GEA)	SOLID	LA-508-462		16.6	%		0.0	04/09/03 (04/04/03	04/04/03
W030000160		GPP	14733-03-0	Bi-214 by GEA	SOLID	LA-508-462		0.362	pCi/g		0.023	04/09/03 (04/04/03	04/04/03
W030000160	48443866666	GPP	ET.C	Ce-144 Rel.% Count Error (GEA)	SOLID	LA-508-462		392	%		0.0	04/09/03	04/04/03	04/04/03
******************	B16RX9	GPP	14762-78-8	Ce-144 by GEA	SOLID	LA-508-462	U	0.0198	pCl/g		0.12	04/09/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	£.T.C	Co-60 Rel.% Count Error (GEA)	SOLID	LA-508-462		322	%		0.0	04/09/03	04/04/03	04/04/03
W030000160		GPP	10198-40-0	Co-60 by GEA	SOLID	LA-508-462	U	1.96e-03	pCi/g		0.011	04/09/03	04/04/03	04/04/03
W030000160	Cran, Main Brasileadail	GPP	ET,C	Cs-134 Rel. % Count Error (GEA)	SOLID	LA-508-462		68,6	94		0.0	04/09/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	13967-70-9	Cs-134 by GEA	SOLID	LA-508-462	υ	0.0227	pCi/g	runur manumamamamamama	0.015	04/09/03	04/04/03	04/04/03
W030000160	B16RX9	GPP	E.T.C	Ca-137 Ref.% Count Error (GEA)	SOLID	LA-508-462		1,00e+03	%		0,0	04/09/03	04/04/03	04/04/03

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Ground Water Protection Program

.+ - Indicates more than six qualifier symbols



Attention: Project:

Steve Trent F03-006: 200-PW-2/PW-4

Group #:

WSCF20030461

Sample #	Client l	D	CAS#	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze Sample Receive
W030000160	B16RX9	GPP	76-35-4	1,1-Dichloroethene	SOLID	LA-523-455	Ü	< 2,00	ug/kg	1.00	2.0	04/16/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	71-36-3	1-Butanol	SOLID	LA-523-455	U	< 20.0	ug/kg	1.00	20	04/16/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	71-43-2	Benzene	SOLID	LA-523-455	Ŭ.	< 2.00	ug/kg	1.00	2.0	04/16/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	108-90-7	Chlorobenzene	SOLID	LA-523-455	U	< 2.00	ug/kg	1.00	2.0	04/16/03 04/04/03 04/04/03
W030000160	B16AX9	GPP	108-88-3	Toluena	SOLID	LA-523-455	Ú	< 2,00	ug/kg	1.00	2.0	04/16/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	79-01-6	Trichloroethene	SOLID	LA-523-455	U	< 2.00	ug/kg	1.00	2.0	04/16/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	8008-20-6	Kerpsene	SOLID	NWTPH	ש	< 4.20e+03	ug/kg	1.00	4.24+03	05/01/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	68476-34-6	Total Pet. Hydrocarbons Diese	l SOLID	NWTPH	U	< 4.20e+03	ug/kg	1.00	4.2a+03	05/01/03 04/04/03 04/04/03
W030000160	B16RX9	GPP	84 15 1	ortro-Temberyi	SOLID	NWTPH		2.204+04	ua/ka	1.00	2.10+02	05/01/03 04/04/03 04/04/03

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MDL=Minimum Detection Limit

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Report W004/ver. 5.1

Ground Water Protection Program

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Sample Delivery Group	WSCF20030461						
Sample Matrix	Soil						
Sample Visual	Brown						
SAF Number	F03-006						
Data Deliverable	Summary Report						

Introduction

Two (2) soil samples (B16RX8, B16RX9) from the GPP was received at the WSCF Laboratory on April 4, 2003. The sample was analyzed for those analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Groundwater Protection Program-Letter of Instruction*, referenced in the cover letter.

The narrative (Attachment 1) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 2) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information. Copies of the chain of custody and Request for Sample Analysis forms are included as Attachment 3.

Analytical Methodology for Requested Analyses

- ICP-MS Metals by EPA Method 200.8 and ICP-AES Metals by EPA SW-846 Method 6010A. Analytical work was performed with no deviations to the approved method.
- VOA's by EPA SW-846 Method 8260A. Analytical work was performed with no deviations to the approved method. The compound 1-Butanol requested under EPA SW-846 Method 8015 was reported under this method.
- Semi-VOA's by EPA SW-846 Method 8270B. Analytical work was performed with no deviations to the approved method.
- Alcohols and Glycols by EPA SW-846 Method 8015. Analytical work was performed
 with no deviations to the approved method. The compound 1-Butanol requested under
 this method was reported under EPA SW-846 Method 8260A.
- WTPH-D by WDOE Method NWTPH-Dx. Analytical work was performed with no deviations to the approved method.
- WTPH-G by WDOE Method NWTPH-Gx. Analytical work was performed with no deviations to the approved method.

- IC Anions and Ammonium by EPA SW-846 Method 300.0 and 300.7. Analytical work was performed with no deviations to the approved method for Ammonium, but a deviation was required for the Anions (see comments below).
- The pH by EPA Method 150.1. Analytical work was performed with no deviations to the approved method.
- Percent Solids by EPA Method 160.3. Analytical work was performed with no deviations to the approved method.
- Cyanide by EPA SW-846 Method 9010. Analytical work was performed with no deviations to the approved method.
- All RadChem analyses (TA/TB, AEA's, GEA) were run by internal WDOE accredited WSCF procedures. Analytical work was performed with no deviations to the approved method.

Comments

PCB's – This analysis was originally on the Sample Chain of Custody when received at the WSCF Laboratory, but the client later requested the analysis not be run.

ICP-MS and ICP-AES Metals – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-27, 2-28, 2-29, 2-30, and 2-48 for QC details.

VOA's – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-36, 2-37 and 2-38 for QC details. Compounds listed on the tentatively identified peak report with an "N" qualifier have been identified with the program used to interpret the raw data.

Semi-VOA's – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-44, 2-45, 2-46 and 2-47 for QC details. Compounds listed on the tentatively identified peak report with an "N" qualifier have been identified with the program used to interpret the raw data.

Alcohols and Glycols – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-37 for QC details.

WTPH-D – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-40 for details.

WTPH-G – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-39 for details.

IC Anions – The client requested hold time(s) for this analysis was not met. The client was notified and requested WSCF to continue with this analysis. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-33, 2-34 and 2-36 for QC details.

NH4 – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-38 for QC details.

The pH – Per the direction of the chain of custody, the pH was completed within 24 hours of sampling.

Percent Solids – PCB's, VOA's, Semi-VOA's, Alcohols and Glycols, WTPH-G and WTPH-D analytical results were corrected for percent solids. All other analytical results were reported for the sample as received.

CN – The hold time(s) for this analysis was met. A Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-26 for QC details.

RadChem – There are no hold times associated with these WDOE accredited methods. Except for GEA, a Laboratory Control Sample and Duplicate were analyzed with each delivery group per the GPP Letter of Instruction. See page(s) 2-31, 2-32, and 2-35 for QC details.

This Summary Report is in compliance with the SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the WSCF Laboratory Analytical Manager and Client Services, as verified by the following signature.

Troy Dale

WSCF Production Control

<u>Abbreviations</u>

Hg - mercury

IC - ion chromatography

ICP - inductively coupled plasma

ICP/AES - ICP/atomic emission spectroscopy

ICP/MS – ICP/mass spectrometry

Total U - total uranium

AT/TB - total alpha/total beta

AEA - Alpha Energy Analysis

WTPH-G - Total Hydrocarbons-Gasoline

Am - americium

Cm - curium

Pu – plutonium

Np - neptunium

GEA - gamma energy analysis

H3 - Tritium

Sr - Strontium 89, 90

WTPH-D - Total Hydrocarbons-Diesel

TSS - Total Suspended Solids

FH-Central Plateau Project	CH	IAIN OF CUST	TODY/S	AMPLE	ANALY	SIS	REQUE	ST	FO	3-006-014	Page 1	ol T
Collector Johansen/Pope/Pfister	Compa	ny Contact Iulstrom	Telephoi 373-39	ne No.			Project Co TRENT, SJ		Trice code Old		Data Tur	
Project Designation 200-PW-2/200-PW-4 OU - Boreholc Soil Sampling		ng Location A-19 (C3245) 22,5-25.(0 ft				SAF No. F03-006		Air Quality 🖂 30 Da			
Ice Chest No. SMC - 69		ogbook No. -N-3361		COA 117504ES	10		Method of Governm	Shipment ent Vehicle				
Shipped To Waste Sampling & Characterization	Offsite	Property No.	NIK	7			Bill of Lad	ing/Air Bill	No. MA	•		·
POSSIBLE SAMPLE HAZARDS/REMARKS		Preservation	Cool 4C	Cool 4C	None	Noo						
		Type of Container	aG	Gs*	P	Snap \	'ial	+	- 			
Special Handling and/or Storage		No. of Container(s)	1	3	1	ī						
		Volume	250mL	40ml.	500mL	60m	L					
SAMPLE ANALYSIS	·		See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (1) in Special Instructions.	Activity	Scan					
20030101		· · · · · · · · · · · · · · · · · · ·										
	nple Date	Sample Time		al de distribution								
\	1-4-03 4-4-C		×	×	× ×	_ <u></u>						
			<u> </u>					.				<u> </u>
			 	 	<u> </u>	. <u></u>	+	_			 	
CHAIN OF POSSESSION	Sign/Print	Names	<u> </u>	SPEC	CIAL INSTR	UCTIO	NS .					Matrix *
Relinquished By Removed Appril H Date Time 141 Rece	By/Store	d In A	licatione 63 149		-	-			nge compounds f d-On) {2-Butoxy			S=Soil SE=Soinne= SO=Solid
Relinquished By/Removed From Date/Tune Rece	ived By/Store	ed in D	ate/Time	(2)	-Diesel Range - Alcohols, Glycol	WIPH-	O; TPH-Gasoli ones - 8015 (ne Range - W -Butanol, Dic	TPH-G; PCBs - : thyl ether, Ethyle	8082 ine glycol, Meth	mol}	SI=Sheige W = Water O=Oil
Relinquished By/Removed From Date/Time Rece	ived By/Store	d In D	ate/Time	Gam	ma Spec - Add-	on (Anti	mony-125, Ce	ium-134, Tin-	pium-152, Europi 126); Isotopic R um; Trace Eleme	adium (Radium	-226, Radium-	A=Air DS=Dress Solids DL=Dress Liquid
Relinquished By/Removed From Date/Time Rece	ived By/Store	ed In . D	ate/Time	(Con Nick	nplete) (Antimo el, Selenium, Si	ny, Arse Iver, Ura	nic, Barium, B nium}; ICP M	ryllium, Cadr tals - 6010A	nium, Chromium (Add-on) {Bismu	, Copper, Lead, nh, Boron); IC	Mercury, Anions - 300.0	TeTisms Wi=Wips L=Liquid
Relinquished By/Removed From Date/Time Rece	ived By/Store	ed In D	ate/Time		orde, Fluoride, 2: Cations (IC)				te, Phosphate, Su I (Soil) - 9045	mate); Cyanide	(10121 <i>)</i> -	V=Vegetation X=Other
Relinquished By/Removed From Date/Time Rece	ived By/Store	ed In D	ate/Time				- ,					
LABORATORY Received By SECTION			Ti	itle						<u>.</u>	Date/Time	
FINAL SAMPLE Disposal Method DISPOSITION		 			Dispo	sed By	 -				Date/Time	

Appendix 5

Data Validation Supporting Documentation

LEVEL:	В	(6)	D	E
PROJECT: 200-PV-2/20	0-PW-4	DATA PACKAG	E: WSCF200	530461
VALIDATOR: TL(LAB: WSC	F	DATE: 10	18/03
CASE:			461	
	Analyses	PERFORMED		
SW-846 8260	SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX				
	316RX9			
				501
	· · · · · · · · · · · · · · · · · · ·			
. DATA PACKAGE COMP	LETENESS AND	CASE NARRATIV	E	
Technical verification documentation	present?		*******************************	Yes No(/N/A
Comments:	<u> </u>			
				
	· · · · · · · · · · · · · · · · · · ·			
				$\overline{}$
2. INSTRUMENT TUNING		-	•	Var. Nul. N/A
GC/MS tuning/performance check ac	cceptable?		*****	•
	cceptable?			Yes No N/A

Comments:____

Standards expired? Yes No N/A
Calculation check acceptable? Yes No N/A

BLANKS (Levels B, C, D, and E)	
Calibration blanks analyzed? (Levels D, E)	Yes No NA
Calibration blank results acceptable? (Levels D, E)	Yes No WA
Laboratory blanks analyzed?	Yes No N/A
Laboratory blank results acceptable?	Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E)	Yes (No) N/A
Field/trip blank results acceptable? (Levels C, D, E)	Yes No N/A
Transcription/calculation errors? (Levels D, E)	
Comments:	NO FB
4. ACCURACY (Levels C, D, and E)	
Surrogates/system monitoring compounds analyzed?	No N/A
Surrogate/system monitoring compound recoveries acceptable?	Yes No NA
Surrogates traceable? (Levels D, E)	Yes No NA
Surrogates expired? (Levels D, E)	Yes No N/A
MS/MSD samples analyzed?	Yes No N/A
MS/MSD results acceptable?	Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes No N/A
MS/MSD standards? (Levels D, E)	Yes No N/A
LCS/BSS samples analyzed?	Yes No N/A
LCS/BSS results acceptable?	Yes No NA
Standards traceable? (Levels D, E)	Yes No NA
Standards expired? (Levels D, E)	
Transcription/calculation errors? (Levels D, E)	
Performance audit sample(s) analyzed?	
Performance audit sample results acceptable?	
Comments:	
·	
	· · · · · · · · · · · · · · · · · · ·

5.	PRECISION (Levels C, D, and E)			
MS/	MSD samples analyzed?	(. yes)	No	N/A
MS/	MSD RPD values acceptable?	Yes	No	N/A
MS/	MSD standards NIST traceable? (Levels D, E)	Yes	No	
MS/	MSD standards expired? (Levels D, E)	Yes	No	(MA)
Field	d duplicate RPD values acceptable?	Yes	No	NA
Field	d split RPD values acceptable?	Yes	No	
	sscription/calculation errors? (Levels D, E)			/==:
Con	uments:			
			·····	
6.	SYSTEM PERFORMANCE (Levels D and E)		/	~
Inte	rnal standards analyzed?	Yes	No	N/A
	ernal standard areas acceptable?	•		N/A
	mal standard retention times acceptable?			
	adards traceable?		- 11	
	adards expired?		١ ١	
	nscription/calculation errors?			1
	mnents:			$\underline{\vee}$
		·		
	·			
_				
7.	HOLDING TIMES (all levels)	\sum_{i}	N7	XI/A
	replies properly preserved?	\wedge	No	NA
	nple holding times acceptable?	163	NO	NA
Cor	minents:			
				
_				
				,

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION	
Compound identification acceptable? (Levels D, E)	Yes No WA
Compound quantitation acceptable? (Levels D, E)	Yes No (N/A)
Results reported for all requested analyses?	Yes No NA
Rresults supported in the raw data? (Levels D, E)	Yes No (N/A)
Samples properly prepared? (Levels D, E)	Yes No N/A
Laboratory properly identified and coded all TIC? (Levels D, E)	
Detection limits meet RDL?	Yes No NA
Transcription/calculation errors? (Levels D, E)	Yes No NA
Comments:	
9. SAMPLE CLEANUP (Levels D and E)	\wedge
GPC cleanup performed?	Yes No N/A
GPC check performed?	Yes No N/A
GPC check recoveries aceptable?	Yes No N/A
GPC calibration performed?	Yes No N/A
GPC calibration check performed?	Yes No N/A
GPC calibration check retention times acceptable?	Yes No N/A
Check/calibration materials traceable?	Yes No N/A
Check/calibration materials Expired?	Yes No N/A
Analytical batch QC given similar cleanup?	
Transcription/Calculation Errors?	Yes No WA
Comments:	
	·
	· · · · · · · · · · · · · · · · · · ·

Appendix 6

Additional Documentation Requested by Client

SDG Number: WSCF20030461

Matrix: SOLID

QC

Type

Test: Alcohols, Glycols - 8015

SAF Number: F03-006 Sample Date: 04/04/03 Receive Date: 04/04/03

Analysis. Lower Upper CAS# Analyte Results Units Date Limit Limit

	Lab ID:	: W030000158
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BATCH QC ASSOCIATED WITH SAMPLE

MS	2-Bromoethanol	540-51-2	112.000	%Recove	05/02/03	70.000	125,000
MS	Diethyl ether	60-29-7	114.000	%Recove	05/02/03	75.000	125.000
MS	Ethylene glycal	107-21-1	104,000	%Recove	05/02/03	75.000	125,000
MS	Mathanol	67-56-1	114.000	%Recove	05/02/03	75.000	125,000
MSD	2-Bromoethanol	540-51-2	103,000	%Recove	05/02/03	70.000	128,000
MSD	Diethyl ether	60-29-7	114.000	%Recove	05/02/03	75.000	125.000
MSD	Ethylene glycol	107-21-1	118.000	%Recove	05/02/03	75.000	125,000
MSD	Methanol	67-56-1	116.000	%Recove	05/02/03	75.000	125.000
SPK-RPD	2-Bromoethanol	540-51-2	8,372	RPD	05/02/03	0.000	20.000
SPK-RPD	Diethyl ether	60-29-7	0.000	RPD	05/02/03	0.000	20,000
SPK-RPD	Ethylene glycol	107-21-1	12.613	RPD	05/02/03	0.000	20,000
SPK-RPD	Methanol	67-56-1	1.739	RPD	05/02/03	0.000	20.000

Lab ID: W030000159 BATCH QC ASSOCIATED WITH SAMPLE

	MS	2-Bromoethanoi	540-51-2	100.000	%Hecove	06/02/03	70.000	125,000
	MS	Diethyl ether	60-29-7	105,000	%Recove	Q5/Q2/Q3	75.000	125.000
	MS	Ethylene glycol	107-21-1	100.000	%Recove	05/02/03	75.000	125.000
	MS	Methanol	67-56-1	107.000	%Recove	05/02/03	75.000	125,000
•	MSD	2-Bromoethanol	540-51-2	97.000	%Recove	05/02/03	70.000	125.000
	MSD	Diethyl ether	60-29-7	100.000	%Recove	05/02/03	75.000	125,000
	MSD	Ethylene glycol	107-21-1	116.000	%Recove	05/02/03	75.000	125,000
	MSD	Mathanol	67-56-1	114.000	%Recove	05/02/03	75 000	125.000
	SPK-RPD	2-Bromoethanol	540-51-2	3.046	RPD	05/02/03	0.000	20.000
	SPK-RPD	Diathyl ether	60-29-7	4.878	RPD	05/02/03	0.000	20.000
	SPK-RPD	Ethylene glycol	107-21-1	14.815	RPD	05/02/03	0.000	20.000
	SPK-RPD	Mathanol	67-56-1	6.335	RPD	05/02/03	0.000	20,000
				, , , , , , , , , , , , , , , , , , , ,			The same of the sa	
	RATCH	OC ·						•

	DAICH	QC						•
	BLANK	2-Bromoethanol	540-51-2	100	ug/Kg	05/02/03	0.000	10.000
	BLANK	Diethyl ether	60-29-7	<5000	ug/Kg	05/02/03	0.000	10.000
	BLANK	Ethylene glycol	107-21-1	< 5000	ug/Kg	05/02/03	0.000	5.000
	BLANK	Methanol	67-56-1	<1000	ug/Kg	05/02/03	0.000	10.000
	LCS	2-Bromoethanol	540-51-2	92,000	%Recove	05/02/03	70.000	130.000
100536	LCS	Disthyl ether	60-29-7	92.000	%Recove	05/02/03	70.000	130,000
	LCS	Ethylene glycol	107-21-1	16.000	%Recove	05/02/03	70.000	130.000
2000 2000 2000 2000	LCS	Methanol	67-56-1	02.00 0	%Recove	05/02/03	70.000	130:000

SDG Number: WSCF20030461 SAF Number: F03-006 Matrix: SOLID

Sample Date: 04/04/03 Receive Date: 04/04/03 Test: VOA Ground Water Protection

					1000110 Date: 0470		· ,, · · ·
QC Type	Analyte	CAS#	Results	Units	Analysis Date	Lower Limit	Upper Limit
Lab ID							
an december	H QC ASSOCIATED WIT	er in contratorio de la contratorio de					
MS	1,1-Dichlomethene	75-35-4	85,400		04/16/03	63,000	117.000
MS MS	Benzene 4-Bromofjuorobenzane Surr	71-43-2 460-00-4	120.000	. 	04/16/03	75.000	129.000
MS	Chlorobenzene	108-90-7	91,200 108,000	000000000000000000000000000000000000000	04/16/03 04/16/03	84.000 79.000	116.000 119.000
MS	1,2-Dighlorpethane-d4 Surr	17060-07-0	110,000	annanananan arabahar	04/16/03	82.000	136,000
MS	Taluene-d8 Surr	2037-26-5	108.000		04/16/03	89.000	119.000
MS	TΩluene	108-88-3	118.00C	% Racov	04/16/03	76,000	120.000
MS	Trichloroethene	79-01-6	95.500	% Recov	04/16/03	73,000	123.000
MSD	1,1-Dichloroethana	75-35-4	89,000	% Recov	04/16/03	63.000	117,000
MSD	Benzene	71-43-2	115.000	ana	04/16/03	75.000	129.000
MSD	4-Bromoficorobenzene Surr	460-00-4	79.800	888 - SOSOO SOSOO SOSOO SOSO	04/16/03	84.000	118,000 *
MSD	Chlorobenzene 1,2-Dichloroethane-d4 Surr	108-90-7 17060-07-0	106.000 115.000		04/16/03 04/16/03	79,000	119.000
MSD MSD	Toluene-d8 Surr	2037-26-5	99,600		04/16/03	82,000 89,000	136,000 119,000
MSD	Tolusna	108-88-3	110,000	ocot e nace como substituto e chi	04/16/03	76,000	120,000
MSD	Trichloroethene	79-01-6	88.300		04/16/03	73.000	123.000
MS	H QC ASSOCIATED WIT	75-35-4	77.100	contract the second of the sec	04/16/03	63.000	117.000
MS	Benzene	71-43-2	113,000		04/16/03	75,000	129,600
MS MS	4-Bromofluorobenzene Surr Chlorobenzene	460-00-4 108-90-7	86.300 105,000	. Allegania e Mandano con con	04/16/03 04/16/03	84.000 79.000	116.000 119.000
MS	1,2-Dichloroethane-d4 Surr	17060-07-0	120.000		04/16/03	82,000	136.000
MS	Tofuene-d8 Surr	2037-2 6 -5	103,000	c commentation	04/18/03	89,000	119,000
MS	Toluene ·	108-88-3	113.000	% Recov	04/16/03	76,000	120.000
MS	Trichloreethene	79-01-6	95.900		04/16/03	73.000	123.000
MSD	1,1-Dichloroethene	75-35-4	81.500	Contraction Contraction	04/16/03	63.000	117.000
MSD	Benzene	71-43-2	108,000		04/18/03	75,000	129,000
MSD	4-Bromofluorobenzene Surr	460-00-4 108-90-7	85.600 104.000	FILE OF THE PARTY	04/16/03 04/16/03	84.000 79.000	116.000
MSD							119.000
MACD.	Chlorobenzene					000000000000000000000000000000000000000	136 000
MSD MSD	1,2-Dichloroethane-d4 Surr	17060-07-0	1 24.000	% Recov	04/16/03	82.000	136,000 119,000
MSD	1,2-Dichloroethane-d4 Surr Totuene-d8 Surr	17060-07-0 2037-26-5	1 24.000 99.800	% Recov % Recov	04/16/03 04/16/03	000000000000000000000000000000000000000	136,000 119,000 120,000
	1,2-Dichloroethane-d4 Surr	17060-07-0	1 24.000	% Recov % Recov % Recov	04/16/03	82.000 89.000	119.000
MSD MSD MSD	1,2-Dichloroethane-d4 Surr Totuene-dB Surr Totuene Trichloroethene	17050-07-0 2037-26-5 108-88-3	124.000 99.800 104.000	% Recov % Recov % Recov	04/16/03 04/16/03 04/16/03	82.000 89.000 76.000	119.000 120.000
MSD MSD MSD Lab ID	1,2-Dichloroethane-d4 Surr Toluene-d8 Surr Toluene Trichloroethene. ; W030000159	17060-07-0 2037-26-5 108-88-3 79-01-6	124.000 99.800 104.000	% Recov % Recov % Recov	04/16/03 04/16/03 04/16/03	82.000 89.000 76.000	119.000 120.000
MSD MSD MSD Lab ID	1,2-Dichloroethane-d4 Surr Toluene-d8 Surr Toluene Trichloroethene : W030000159 H QC ASSOCIATED WIT	17060-07-0 2037-26-5 108-88-3 79-01-6	124.000 99.800 104.000 88.600	% Recov % Recov % Recov % Recov	04/16/03 04/16/03 04/16/03 04/16/03	82.000 89.000 76.000 73.000	119,000 120,000 123,000
MSD MSD MSD Lab ID BATCI MS	1,2-Dichloroethane-d4 Surr Toluene Trichloroethene : W030000159 H QC ASSOCIATED WIT	17060-07-0 2037-26-5 108-88-3 79-01-6 TH SAMPLE 75-36-4	124.000 99.800 104.000 88.600	% Recov % Recov % Recov % Recov	04/16/03 04/16/03 04/16/03 04/16/03	82.000 89.000 78.000 73.000	119,000 120,000 123,000 123,000
MSD MSD MSD Lab ID BATCI MS MS	1,2-Dichloroethane-d4 Surr Toluene-d8 Surr Toluene Trichloroethene : W030000159 H QC ASSOCIATED WIT 1,1-Dichloroethene Benzene	17060-07-0 2037-26-5 108-88-3 79-01-6 TH SAMPLE 75-36-4 71-43-2	124.000 99.800 104.000 88.600 88.000	% Recov % Recov % Recov % Recov % Recov	04/16/03 04/16/03 04/16/03 04/16/03 04/16/03	82.000 89.000 78.000 73.000 63.000 75.000	119,000 120,000 123,000 123,000 117,000 129,000
MSD MSD MSD Lab ID BATCI MS	1,2-Dichloroethane-d4 Surr Toluene Trichloroethene : W030000159 H QC ASSOCIATED WIT	17060-07-0 2037-26-5 108-88-3 79-01-6 TH SAMPLE 75-36-4	124.000 99.800 104.000 88.600	% Recov % Recov % Recov % Recov % Recov % Recov	04/16/03 04/16/03 04/16/03 04/16/03	82.000 89.000 78.000 73.000	119.000 120.000 123.000 117.000

SDG Number: WSCF20030461

Matrix: SOLID

Test: VOA Ground Water Protection

SAF Number: F03-006 Sample Date: 04/04/03 Receive Date: 04/04/03

_QC						Analysis	Lower	Upper
Туре	Analyte		CAS#	Results	Units	Date	Limit	Limit
MS	1,2-Dichlomethane		17060-07-0	118,000	% Recov	04/16/03	82,000	136.000
MS	Toluene-d8	Surr	2037-26-5	101.000		04/16/03	89.000	119.000
MS MS	Taluene		108-88-3	109,000	econocide processing	04/16/03	76.000	120,000
MSD	Trichlomethene 1,1-Dichlomethene		79-01-6 76-35-4	96.400	concentration and the contract of the contract	04/16/03	73.000	123.000
MSD	Benzene Benzene		71-43-2	81,000 116,000	\$	04/18/03	63.000	117.000
MSD	4-Bramafluorabanzi	ine Surr	460-00-4	96.100	% Recov	04/16/03	75.000	129.000
MSD	Chlorobenzene		108-90-7	110,000		04/16/03	84.000 79.000	116,000
MSĎ	1,2-Dichlorpethane	d4 Sum	17060-07-0	120,000	and the second	04/16/03	82,000	119.000 336.000
MSD	Toluene-d8	Surr	2037-26-5	106,000	9559666666666666	04/16/03	89.000	119.000
MSD	Toluene		108-88-3	109.000	ana and an	04/16/03	76.000	120.000
MSD	Trichloroethene		79-01 - 6	96.800	% Recov		73.000	123.000
SPK-RPO	1,1-Dichlorpethene		75-35-4	5,988	RPD	04/16/03	0.000	25.000
SPK-RPD	Benzene		71-43-2	1.709	RPD	04/16/03	0,000	25,000
SPK-RPD	4-Bramofluorobenza	ne Surr	460-00-4	10.630	RPD	04/16/03	0.000	25.000
SPK-RPD	Chlorobenzene	1000 Department of the topological College Col	108-90-7	5.607	RPD	04/16/03	0,000	25.000
SPK-RPD	1,2-Dichlargethane-	d4 Sürr	17060-07-0	1.681	RPD	04/16/03	0.000	25.600
SPK-RPD	Toluene-d8	Surr	2037-26-5	4.831	RPD	04/16/03	0,000	25,000
SPK-APD	Toluene		108-88-3	0,000	RIPD:	04/16/03	0.000	25,000
SPK-RPD	Trichloroethene		79-01-6	0.414	RPD	04/16/03	0.000	25.000
SURR	4-Bromofluorobenze		460-00-4	93.100	% Recov	04/16/03	71.000	125,000
SURR	1,2-Dichloroethane-	d4 Surr	17060-07-0	119.000	% Recov	04/16/03	80,000	134,000
SURA	Yoluene-d#	Surr	2037-26-5	105.000	% Recov	04/16/03	80,000	126,000
I oh ID.	W020001	60						
Lab ID:			CAMDIE					
The street and the st	QC ASSOCI				9. 02.40825 8 (0.600.0)			
SURR	4-Bromoffuorobenze	SERGERATARA CONTRA SE DESERVA DE LA CONTRA DE	460-00-4	97,800	% Recov		71.000	125,000
SURR	1,2-Dichloroethane- Toluene-d8	udduoe hithidu (d. 2.4000 u. 2000 his opoco	17060-07-0	114.000	% Recov	course of the technology concerns to the co-	80,000	134.000
SURR	teluena-gs	Surr	2037-26-5	114,000	% Recov	04/16/03	90.000	126.000
BATCH	מר							•
BLANK	1,1-Dichloroethene		75-35-4	< 1.0	ug/Kg	04/16/03		
BLANK	1-Butanel		71-36-3	< 10		04/16/03		
BLANK	Benzene		71-43-2	< 1.0		04/16/03		
BLANK	4-8ramofluorobenza	ne Surr	460-00-4	93.400	% Recov	saw waattaarraabhawaanweetsaat	71.000	125,000
BLANK	Chlorobenzene		108-90-7	< 1.0		04/16/03		
BLANK	1,2-Dichloroethane-	i4 Surr	17060-07-0	119,000	% Recov	ann an	80,000	134.000
BLANK	Toluene-d8	Surr	2037-26-5	103.000	% Recov		80,000	128,000
BLANK	Toluena		108-88-3	< 1.0	ug/Kg	04/16/03		
BLANK	Trichloroathane		79-01-6	< 1.0	(ବିବିଦ୍ୟୁ କ୍ରିଲିକ୍ଟିକିକିକ କଳ ବଳ ଏକ ପ୍ରଥମ	04/16/03		
LCS	1,7-Dichloroathens		75-35-4	86,900	% Aecov	and the commence of the second of the second	70.000	130.000
LCS	Benzene		71-43-2	121.000	% Recov	04/16/03	70.000	130.000
LCS	4-Bromofluerobenze	ne Surr	460-00-4	91,900	% Recov		71.000	125.000
LCS	Chlorobenzene		108-90-7	97.500	% Recov	OBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBB	70.000	130.000
ucs	1, Z-Dichlorpethane-	d4 Sure	17060-07-0	136,000	% Recay	04/16/03	80.000	134.000 *
LCS	Toluene-d8	Surr	2037-26-5	105.000	% Recov	04/16/03	80.000	126.000

Report w13q/rev.5.1 p 17 30-may-2003 13:21:29

SDG Number: WSCF20030461 Matrix: SOLID Test: VOA Ground Water Protection

SAF Number: F03-006 Sample Date:

Receive Date:

QC Type	Analyte	CAS#	Results	Units	Analysis Date	Lower Limit	Upper Limit	
LCS LCS	Tokuena Trichloroethena	108-88-3 79-01-6	£04:560 99.700	10040000000000000000000000000000000000	04/16/03 04/16/03	70.000 70.000	130,000 130,000	7